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MILITARY REVIEW

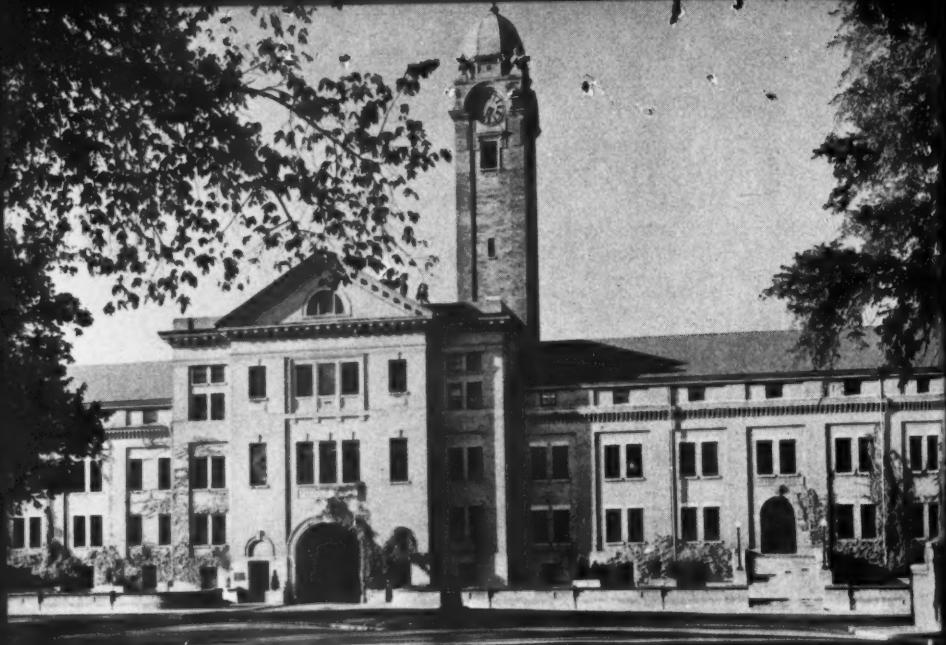


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SEPTEMBER 1953

VOLUME XXXIII

NUMBER 6



COMMAND AND GENERAL STAFF COLLEGE

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ATOMS AND SEA POWER

Colonel Irving D. Roth, *Artillery*
Instructor, Command and General Staff College

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

PERHAPS no single achievement has had such far-reaching effect upon our national life as the development of the atom bomb and the power potential of all forms of nuclear reaction. The repercussions are being felt in every sphere of our national activity. Our Navy Department saw an immediate and urgent implication in the possible tactical effect on fleet formations. A second, and quite different, development was in the use of nuclear reactors as power plants for submarines and capital ships.

Mahan's Concept

What effect will these advances have upon the earlier concept of sea power as expressed in 1890 by Alfred Thayer Mahan in his book *The Influence of Sea Power Upon History, 1660-1783?* In this volume Mahan set out his concept of sea power. Many writers since that time have written volumes in which this concept of sea power has been analyzed. In 1947, William E. Livezey, in his book entitled *Mahan Upon Sea Power*, expressed the concept as follows:

Sea power was by no means synonymous with naval power, in the hands of this analyst (Mahan)

it included not only the military strength afloat that ruled the sea or any part of it by force of arms, but equally "the peaceful commerce and shipping from which alone a military fleet naturally and healthfully spring, and on which it securely rests."

Later in this same work Livezey sums up Mahan's concept of sea power as:

Command of the sea which would assure the possessor of the potential strength to win was a prerequisite. This command of the sea guaranteed, in war or peace, the continuance of maritime commerce with its exchange of finished produce for supplies and raw materials; a close relation between foreign trade and the navy was thus affirmed. *The effectiveness of the navy, however, was dependent upon bases and distant stations.**

Fleet strength alone, according to Mahan's concept, is not in itself a panacea. There must be sufficient bases, adequately equipped and strategically located geographically to ensure the ever readiness of combatant ships.

William Henry Chamberlin, writing in *FOREIGN AFFAIRS* in April 1937, stated:

Bases, it should be noted, are of equal value with ships in modern naval warfare, especially when the potential theater of hostilities is as wide as the Pacific Ocean. The strongest navy in the world is seriously crippled as regards offensive striking power if it is obliged to sail many thousands of miles to attack its opponent, with no base on the route at which it can put in for refueling, repairs, and general overhauling. Indeed, in some respects, bases are more important than the actual number of ships of the line. Japan would probably view with more alarm and resentment the construction of a

* Italics are the author's.—The Editor.

The development of atomic power plants for ships will not reduce the over-all requirements for supply, repair, and refitting facilities. Naval bases—either ports or floating bases—will continue to be necessary

powerful American naval base in the Philippines or in Guam, which the well-known British naval critic Hector Bywater has described as the key to the Western Pacific, than the starting of work on several new battleships or heavy cruisers.

Pre-World War II Bases

Prior to World War II, and as a direct result of experience gained in World War I, the major powers of the world established far-flung networks of naval bases. An analysis of the naval bases under the control of these powers, excluding home bases, reveals that Japan and Great Britain were far ahead of all others in this project. The major foreign naval bases (known or assumed to be in operation in 1937) are shown in Figure 1.

During the post-World War I period, our efforts to establish naval bases were severely limited by a feeling in the United States that, now that World War I had been successfully concluded, there would be a long period of peace to follow. During this period also, it is a fact that our fleet strength had been sharply reduced, largely as a result of the armament limitation treaties of 1922 and 1930. These treaties provided that naval fleet strength would be limited and new construction of bases would be stopped.

The most important United States bases outside the continental United States are shown in Figure 2. These bases, however, were not at peak strength, in men or facilities, and, therefore, were not adequate to support combat operations by a major portion of our fleet.

Of the bases shown on Figure 2, only the Hawaiian and Philippine Islands pos-

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sessed extensive repair facilities. Guam had not been fortified nor provided with shop and repair facilities. Chinwangtao was only a coaling station whose approaches were dominated by Japanese bases in the Sea of Japan.

As a direct consequence of the effectiveness of German submarine warfare against our merchant shipping early in World War II, it became more and more essential that our fleet strength be rebuilt and our bases re-established. Fleet strength was gradually increased, but no new bases were developed initially. We were forced to rely upon those which we had, expanding their facilities to the maximum extent practicable.

In December 1941, our largest naval base in the Pacific, Pearl Harbor, was attacked by the Japanese with devastating results. Simultaneously, the Cavite Naval Base in the Philippines was attacked and virtually destroyed. In addition to a major portion of our fleet being put out of action, the destruction of these two bases meant that, for a long time, our Pacific Fleet would be impotent.

How dependent was our Navy upon these bases? In order to carry on the naval campaign against the Japanese Fleet without these two bases, it was necessary to obtain virtually all essential supplies from bases located on the west coast. Refitting and repair facilities in the Pacific Ocean area were woefully inadequate to provide essential support for even carrier task forces in that area.

The history of operations of the Third and Seventh Fleets in the Pacific reveals that large task forces were able to operate for long periods of time without returning to base for refitting, replenishment of supplies, and replacement of personnel. How was this made possible? Numerous small advanced bases were established in the Pacific Ocean area and a tremendous fleet train of tankers, tenders, and cargo ships was assembled to serve as floating supply

bases and repair shops. Rather than having ships from task forces travel long distances to bases for supplies, the tankers and cargo ships were sent to rendezvous points at sea where supplies were delivered and repairs made to the ships of the task force. To expedite repairs, floating drydocks were constructed and moved to the forward bases in the area of opera-

ers, and cargo ships—and the floating drydocks still had to be provided with supplies and equipment for the fleet from shore based installations. The fact that the major sources of these supplies were in the continental United States required construction and manning of numerous new bases, large and small, on both the east and west coasts of the United States.

NORTH ATLANTIC OCEAN

GREAT BRITAIN	FRANCE
Halifax	Dakar
Bermuda	Fort-de-France
Gibraltar	
Freetown	

SOUTH ATLANTIC OCEAN

GREAT BRITAIN
Port Stanley
St. Helena
Simonstown

MEDITERRANEAN SEA

GREAT BRITAIN	ITALY
Malta	Cagliari
Haifa	Palermo
Port Said	Messina
Suez	Tobruk
Port Sudan	Pantelleria

INDIAN OCEAN

GREAT BRITAIN	FRANCE
Aden	Singapore
Bombay	Hong Kong
Colombo	Port Louis
Trincomalee	Seychelles
Rangoon	

NORTH PACIFIC OCEAN

RUSSIA	GREAT BRITAIN
Vladivostok	Esquimalt
JAPAN	
Lüshun (Port Arthur)	Bako (Formosa)
Chingkai	Yap
Ammami-O-Shima	Truk
Futami-Ko	

SOUTH PACIFIC OCEAN

GREAT BRITAIN	FRANCE
Auckland	Noumea
Sydney	
King George Sound	

FIGURE 1.

tions. In this way repairs and replenishment of material and replacement of personnel were accomplished with a minimum interruption of fleet operations.

However, it was only during the latter stages of the war in the Pacific that we were enabled to prosecute the war on a major scale, after we had established these numerous advanced bases and had developed our refueling and resupply procedures at sea.

These advanced bases—the tankers, tend-

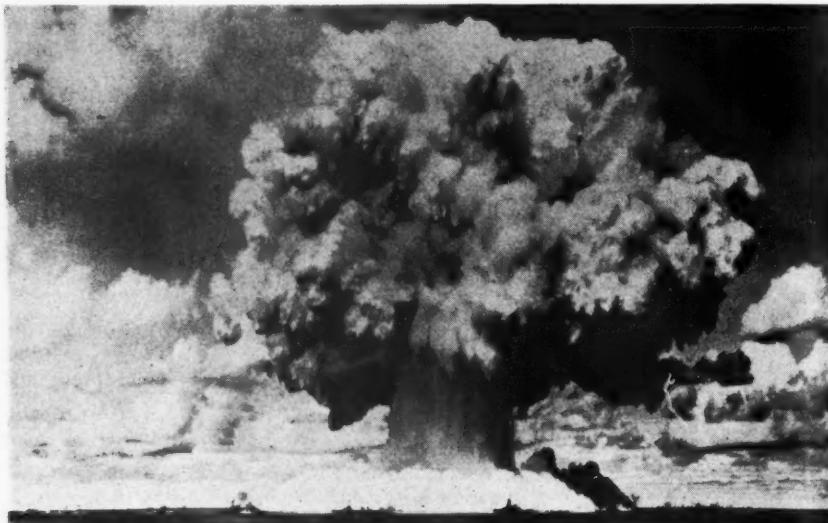
ers, and cargo ships—and the floating drydocks still had to be provided with supplies and equipment for the fleet from shore based installations. The fact that the major sources of these supplies were in the continental United States required construction and manning of numerous new bases, large and small, on both the east and west coasts of the United States.

There were special bases for fuel oil, ammunition, and general supplies. Provision of a continuous flow of replacements from training stations to advanced bases was still another burden placed on the logistical support force of the Navy.

We see then that to maintain control of the sea and to be an effective "sea power" a nation cannot rely alone on its fleet strength. Bases must be provided which can provide adequate service and furnish the material with which to wage war.

So far we have not discussed nor considered the impact of new and radical technological advances in naval construction, propulsion, and armament. What will be the impact of the atom-powered submarine and capital ship? Will these advances eliminate the need for a vast network of bases such as those required heretofore?

ant increase in the requirement for fuel. Until such time as a lightweight, solid fuel can be developed for use in jet-powered aircraft, we will still have a need for large fleets of tankers to transport the required fuel. There will be no diminution in the ammunition requirements for the fleet. In fact, with the employment of guided



The Navy will be required to make tactical and technical changes imposed by the employment of atomic energy. Above, an atom bomb exploding among naval vessels at Bikini.

Let us examine this picture and see what changes, if any, may be necessary.

The advent of the atomic power plant for ships will have one major effect on the supply problem. There will be a much lowered requirement for fuel oil for ships. This reduction in fuel oil requirement will permit a larger quantity of ammunition and general supplies to be carried. There is, however, another factor which will, to a large degree, offset this saving. There will always be a need for air protection for the fleet, both at sea and when at anchor at a base. This will necessitate large numbers of aircraft with an attend-

missiles there may be a proportionately greater need for cargo ships, since space and weight requirements for resupply of guided missiles may be proportionately greater than for conventional weapons.

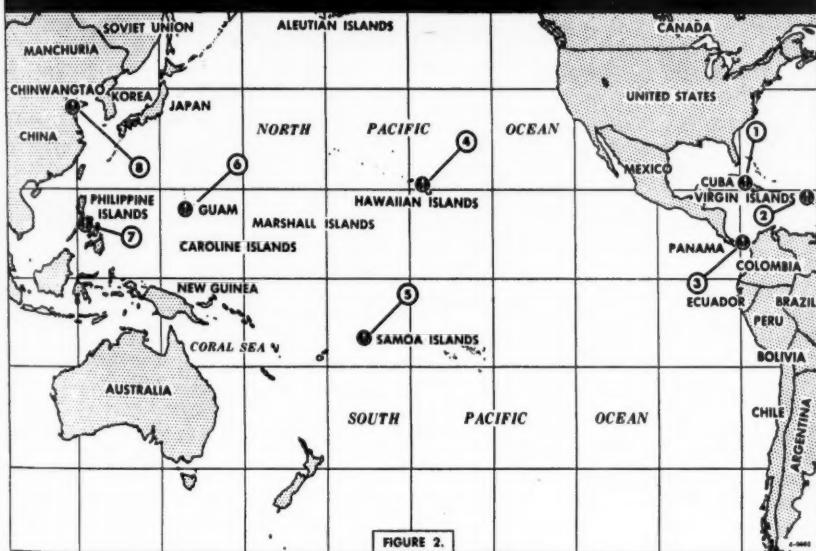
Although atomic-powered ships will be enabled to remain at sea for longer periods of time without refueling, there will still be a need for the replenishment of other supplies, and in addition there will always be a need for rotation or replacement of personnel.

Atomic power plants for submarines will reduce fuel requirements for these craft. Capacity for sustained periods of opera-

tion will be increased, with an attendant increase in radius of operation. This increase in operational time will be complicated by an increased need for stores of food, resupply of torpedoes, and for facilities for rehabilitation or replacement of personnel. These latter requirements will make it mandatory that some type of base

of war—the atom bomb. Will the atom bomb render large concentrations of ships such as were employed during World War II obsolete? Must there be a re-evaluation of our concept of large ports and naval bases with a consequent requirement for an increase in smaller bases? Will it be necessary to improve and expand our

UNITED STATES NAVAL BASES BEFORE WORLD WAR II



be available, whether it be a shore based installation or a "mother ship" at sea.

There will be an impact on the requirement for antisubmarine defense for merchantmen and ships of the line. With the ability to operate at long distances for long periods, the submarine will be an even greater menace than during World War II. The day when the German U-boat threat to our control of the sea gave us much concern is not too far distant, and the possibility that this menace can be even more serious must be reckoned with.

Let us now discuss the impact of one of the most powerful and destructive weapons

"over-the-beach" loading operations procedures for refitting, in lieu of the use of ports and harbors? Let us take these questions in turn and determine what effect the atom bomb will have on each.

With respect to the use of atom bombs against large fleet formations, the initial tests conducted at Bikini in 1946 cannot be taken as conclusive evidence that similar damage would be effected against ships traveling in normal fleet formations. The target array during these tests was designed to provide damage data, and not intended to present a tactical fleet formation. However, Mr. William A. Shurcliff,

Historian of Joint Task Force One, in his book *Bombs at Bikini*, lists the following conclusions:

1. The majority of lighter warships located within a critical radius somewhat less than one-half mile away may be expected to be sunk by an atomic bombing attack such as that executed on A-day.

2. Heavy warships located within one-half mile may survive, but their superstructures will be badly damaged and the ships will be put out of action; *extensive repairs at a principal naval base will be required.**

3. Ships more than three-fourths of a mile away may suffer damage, but the damage will be relatively light in typical cases.

4. Among the most badly damaged ships, damage to superstructures was very severe; hulls escaped relatively lightly. Damage extends to nearly all kinds of mechanical and electrical equipment.

Let us now consider the second of our questions—the need to revise our estimate on the requirement for large ports and naval bases. As was pointed out above, should our fleet be attacked at sea with atom bombs, there would be a requirement for extensive repairs to those ships which were within a radius of three-fourths of a mile of zero point. Assuming a fleet strength equal to that of World War II, and more relative damage, the obvious conclusion is that we will still have a need for at least as many and probably more large ports and naval bases as were needed during World War II. Should these bases be small or large? It is probable that the smaller the base the less remunerative a target it will be; hence small bases will be more advantageous. However, any increase in the number of bases will increase the requirement for manpower to operate these bases. Any increase in manpower requirements for base operations will entail a decrease in manpower available for military and naval requirements. There must be some "happy medium" which will provide essential services at a manpower cost which we are able to pay. This problem,

then, is one which will require further detailed study.

Should we resort to "over-the-beach" loading operations? Here again we are faced with a dilemma. There are few areas which are suitable for such operations. Among other things, we must have access roads, adequate storage facilities, good beaches, and ideal offshore conditions to include protected anchorages for large cargo and combat ships. This system of loading is the most costly in manpower and equipment, and fails to take advantage of the loading speed which can be achieved under more normal conditions at large ports and bases.

Conclusions

An analysis of the preceding discussion leads us to the following conclusions:

1. The development of atomic power plants for ships will not reduce over-all requirements for supply, repair, and refitting facilities.

2. Naval bases, whether they be established at or near large ports, or whether they are small floating bases, must be provided for proper support of the fleet to ensure control of the sea.

3. Employment of atomic weapons against fleet formations or bases will make mandatory the need for adequate air defenses. This will require both air protection by land based and carrier based aircraft, and extensive antiaircraft defenses to minimize the probability of a successful attack.

The atomic age has not materially altered Mahan's concept of "sea power." The changes necessitated are in the tactical and technical measures taken to ensure that our fleet is able to carry out its mission of gaining and maintaining control of the sea to provide this country with the freedom of action necessary to maintain effectively our God-given liberty.

* Italics are the author's.—The Editor.

NAPALM

Major Michael J. Dolan, *Infantry*

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

A BLAZING torch served as an effective weapon for warding off night prowling animals in prehistoric times. Today in Korea, United Nations forces are using a modern development of that early weapon in warding off the attacks of Communist forces.

The fighting in Korea has brought sharply into focus many death-dealing weapons presently being employed on that benighted peninsula. Bazookas, recoilless rifles, and mortars have had their full share of publicity in the press, but none of these weapons has seized the imagination of the reading public quite like napalm.

Despite the tremendous flood of publicity, the average reader appears to have little factual knowledge of this amazingly potent dispenser of flaming death. The end result of the use of napalm is so spectacular that there has been little demand for anything more than broad generalities.

Napalm is a two-edged weapon. The Chinese Communists who have been on the receiving end of the napalm strikes made by our Fifth Air Force planes now have the secret of making napalm. If the enemy

can secure airfields in Korea, thus increasing the cruising radius of the *MiG*, the probability of napalm strikes on United Nations troops will exist. With this threat of retaliation in kind poised as a clear and present danger, the time for generalities is past and the need arises for an understanding of the basic facts concerning napalm.

What is napalm? Where did it originate? How is it made? How is it exploded? Does it kill by suffocation? Is it an effective antitank weapon?

These are just a few of the questions asked daily. All of the answers have not been figured out yet, but the experts are working on them. Whatever final conclusions may be arrived at, they are not likely to alter materially the reputation of this devastating munition.

Fire has been used as an agent of war with varying degrees of effectiveness since long before the time of Christ. The employment of liquid fire is said to have been represented on Assyrian bas reliefs, and the Spartans are said to have given the Greeks an ancient version of the hotfoot by placing a cauldron containing pitch, sulphur, and burning charcoal against the city walls and fanning it into a blaze with a crude bellows.

A century or so later, an unsung naval tactician produced a mixture of pitch, sulphur, charcoal, incense, and tow packed into tubs, which was ignited, and thrown on the decks of enemy ships. This method

Napalm, whether in aerial bombs or flame throwers, has proved itself on World War II and Korean battlefields as an effective, versatile, and fear-provoking weapon, especially against targets vulnerable to fire

was later refined through the addition of naptha or petroleum to create a devastating sea weapon which remained as probably the most effective weapon until the discovery of those mixtures which came to be known as "Greek fires."

John M. Stillman, in his book *The Story of Early Chemistry*, quotes a recipe for Greek fire by Julius Africanus, who lived in the third century:

It is prepared as follows: native sulfur, salt of the mountains, ashes, thunder stone, pyrites, equal parts. Mix in a black mortar at noon with the juice of the black mulberry and bitumen of Zacynthus, a natural liquid, in equal parts to a pasty consistency. Add with care a little quicklime, grind carefully at noon. Guard your face for the material may take fire suddenly. Enclose it in a copper box with a cover, and keep it and do not expose it to the sun. If you wish to set fire to the arms of the enemy, secretly spread over them this preparation at night. When the sun rises all will be burned.

Crusaders, during their attempts to reason with the Byzantine Greeks, encountered "wild fire" which contained sulphur, tallow, rosin, turpentine, saltpeter, and crude antimony.

According to historians, an Egyptian architect named Callinicus who lived in Constantinople about A.D. 668 evolved the basic recipe for what has since been called Greek fire. Its early application was in naval battles where the liquid fire, ejected from crude siphons onto enemy ships, started fires which were impossible to quench. In fact, if the fire fighters were so misguided as to attempt to douse the fire with sea water, the quicklime in the mixture caused the liquid to burn with even greater intensity.

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While designed initially as a naval weapon, Greek fire proved its worth during several sieges of Constantinople as a land weapon as well. The troops of Mohammed II literally received a baptism of fire when the defending Greeks doused the Turks manning scaling towers and ladders with the fiery mixture.

The exact proportions of the Greek fire mixture remained a jealously guarded secret of the rulers of Constantinople, and the formula seems to have been lost with Constantinople's fall.

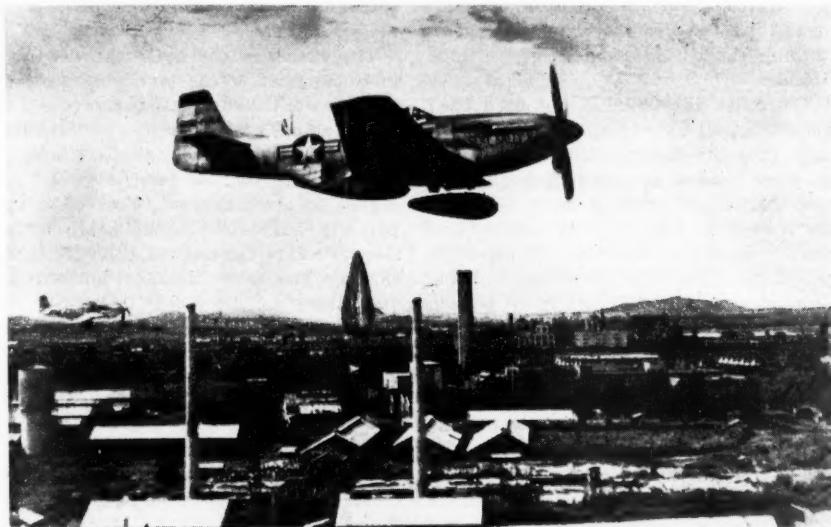
The advent of gunpowder overshadowed the use of liquid fire as a major weapon, because attacking forces no longer had to come within the very limited range of the "fire throwers." From time to time thereafter, attempts were made to re-introduce incendiaries as active weapons of battle. However, it was not until 1915 that incendiary attacks against ground troops were initiated with any appreciable degree of success.

Flame Throwers

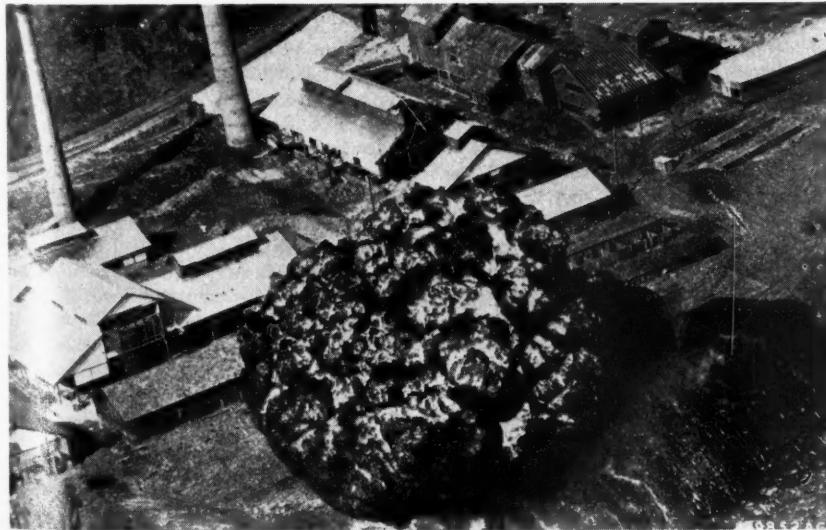
In World War I, the Germans introduced the *Flammenwerfer* to the French at Verdun; the French retaliated on the Somme with a similar weapon, while the American Expeditionary Force developed several models too late for use on the battlefield.

Apparently, the flame thrower of that day created more of a morale problem than it produced casualties. It was heavy, cumbersome, and of very short range. It did not always fire, and this often proved embarrassing to the operator. Techniques for protecting the operator so that he might have the opportunity to survive long enough to close to effective range had not been worked out. Disciplinary problems within a unit, however, could be competently handled by assigning trouble-makers to carry the flame thrower.

During World War II, a greatly improved model of the flame thrower was used effectively in the South Pacific against



No matter how devastating a napalm bomb may be, its effectiveness is in direct proportion to the accuracy of the pilot dropping the bomb. Above, two napalm bombs being released from an *F-51 Mustang* over a North Korean industrial target. Below, a direct hit by a napalm bomb on a North Korean mine complex.—Department of Defense photos.



enemy troops holed-up in caves and dug-outs. It also proved effective in Europe in flushing the enemy from Siegfried Line defenses.

The flame thrower has not been used too extensively as yet in the Korean fighting. Probably the greatest deterrent to its more general employment is the fact that the weapon must be back-packed up the almost vertical slopes to reach Communist defensive positions. When it is considered that the present-day flame thrower weighs approximately 70 pounds when fully loaded and that the maximum firing time is 8 to 10 seconds, the reluctance of the troops to employ the weapon is understandable. Loading equipment must necessarily remain at the foot of such mountains, so the weapon must be returned from the firing site for reloading. Another factor that has precluded extensive use of the portable flame thrower is the maintenance required to keep it operating.

A False Concept

The Hollywood conception—that the flame thrower operator fires his weapon by clamping down on both triggers while he sprays fire all over the landscape—makes for a good movie scene, but it is a far cry from actual operations. In this respect it would put the flame thrower in the same class as the magic "six-shooter" of the movie cowboy which seems to have an inexhaustible supply of bullets and which seems to be far more deadly and accurate at 200 yards than a Winchester rifle.

In actuality, if the triggers are held down the flame is expended in less than 10 seconds. The conventional method of firing the flame thrower is to fire in "squirts" of very short duration. In this way, about six to eight "squirts" out of a flame thrower may give effective coverage of a target. The technique involved is to shoot the thickened mass at the tar-

get, igniting any inflammable material in the area.

The effects of the flame thrower seem to be a result of the terrifying sight of the flame to the entrenched enemy, as well as the actual heat generated by the burning gas. The psychological effect brought about by the fear of being burned alive cannot be overestimated. Fear alone apparently has often caused death in instances where the napalm from the flame thrower has never actually touched the victim.

The flame thrower is not a miracle weapon. Proper utilization demands that it be used against targets susceptible to the burning effects of the weapon. Moreover, the operator has to get as close to the target as possible because of the limited range of the weapon, which in turn creates the problem of protection for the operator from enemy fire. However, new techniques of employment are constantly being tested.

The tank-mounted flame thrower, developed in World War II and used to a limited extent in Korea, offers one approach to the problem of protecting the operator. However, it has obvious and serious drawbacks, which tend to offset its advantages. Chief among the drawbacks is the inability to get the tank flame thrower up the steep grades, where the enemy generally digs in, and the amount of enemy fire that this weapon attracts.

Aircraft Flame Throwers

The British in World War II experimented with ground-attack aircraft which had flame throwers mounted in the belly of the aircraft. Apparently the inability to slow down the speed of the aircraft prevented any serious development along the line. Moreover, the discovery of the napalm or "fire" bomb tended to discourage further experimentation along this line.

Like so many other great discoveries,

the napalm fire bomb came about almost by accident. World War II pilots found that jettisoning partially filled droppable gas tanks and then igniting them by strafing with incendiary ammunition created a gratifying explosion and resulting fire. Experts came up with the idea of filling the auxiliary tanks with napalm, already in use as a flame thrower fuel. The tanks were then equipped with internal and external igniters made up of thermite or magnesium incendiary bombs and white phosphorous grenades, which detonated on impact, and the napalm bomb was born.

What Is Napalm?

Strictly speaking, napalm is a mixture of metallic soaps including coconut fatty acids, oleic acid, and napthenic acid. The name is derived from "nap" for napthenic acid and "palm" for the coconut fatty acids. Before its mixture with gasoline the basic ingredients resemble a low-grade soap powder. When stirred into gasoline, the resulting "gel" resembles an amber gelatin. When ignited, napalm burns with a fierce, although brief, intensity, generating heat up to 1,450 degrees Fahrenheit.

Temperature, time of stirring, proportion of napalm to gasoline, and degree of agitation are all factors which have significant effects on the properties of the napalm gel. According to E. W. Hollingsworth, Chief Engineer, Munitions Division, Army Chemical Center, Maryland, in his authoritative article "*The Use of Thickened Gasoline in Warfare*," in the July 1951 issue of the ARMED FORCES CHEMICAL JOURNAL, at temperatures below 50 degrees Fahrenheit the rate of gelation is too slow to be practicable. Moreover, if the temperature is above 95 degrees Fahrenheit, the gel may form too rapidly to permit a homogeneous mixture. To speed up gelation in cold weather, however, an acid type chemical called peptizer can now be added to the mixture.

Adequate mixers for field use were not

available early in the Korean conflict and it was a common sight to see Korean laborers at advanced airfields stirring up a batch of napalm in a 55-gallon gas drum using an improvised paddle as a king-size swizzle stick. The resultant mixture was then siphoned off into droppable tanks and allowed to age.

It requires approximately 24 hours for napalm to gel fully. Unfortunately, field conditions combined with the exigencies of the battle situation generally prevented the napalm ever reaching full maturity. Temperatures, during the extremes of summer and winter in Korea, tended to produce some queer mixtures—all called napalm.

Napalm is also plagued by moisture and deterioration. While crude oil and other fuels can be added to gasoline without affecting the gel too greatly, water cannot be added. In the highly humid summer months of Korea, moisture was a definite problem. This caused the thickened gasoline to "break down," losing its homogeneous character and its effectiveness.

Fire Bombs

The percentage of napalm used in the fire bombs must be considered in analyzing the effectiveness of napalm. The average mix consists of 6 percent to 13 percent napalm. A recommended formula for one type of powder includes 50 percent coconut fatty acids, 25 percent oleic acid, and 25 percent napthenic acid. A new formula, utilizing less napthenic acid, has been developed for use in the event a shortage of that acid materializes.

A greater percentage of napalm powder added to the gasoline causes it to be less volatile and results in a longer burning time. Complaints from the field to the effect that in too many instances the napalm bomb seems all flash and no effect can be traced to too thin or a "broken" mixture. It would seem sensible to utilize a thinner mixture on, say, a troop

concentration in the open, than upon a pillbox or dug-in troops. In the former, broad "splash" coverage is the desired effect, whereas when attacking enclosures a more concentrated strike is desired. In attacks using droppable fuel tanks (fire bombs) the area of assault should be well



The *M2* flame thrower, which is the standard model now in use by the armed forces, saturated to gain an appreciable effect. They should be used in volume on any target.

No matter how devastating a bomb may be, its effectiveness is in direct proportion to the pilot's accuracy in bombing. Techniques vary with pilots, but at the present time, using the droppable fuel tank, certain inherent characteristics govern bombing technique with napalm.

For accuracy and maximum effect, napalm should be delivered at an altitude not exceeding 100 feet. The thin casing bursts as the bomb strikes the ground, spreading the flaming napalm over an elliptical area about 80 feet wide and 275 feet long. The

length varies, naturally, with the forward motion of the bomb, which in turn is dependent on the speed of the aircraft. Thus, it would take only two napalm bombs, properly placed, to cover an area slightly less than a football field.

Efforts are being made to improve accuracy from release at higher altitude by adding fins to the tank. However, experience from World War II indicates that this was not too successful because the vertical impact caused the tank to penetrate the ground with cratering effect, so that the spread of the flaming gel was considerably reduced.

Early experience with the napalm bomb involved the use of one igniter as an integral part of the filling cap, with a second igniter attached by a bracket to the tail closing plug. Almost invariably, the tail igniter would break off in flight, thus losing the desired effect of a double ignition of the flaming gel.

Currently in use in Korea is a napalm tank manufactured of low-grade metal by the Japanese. It has a 110-gallon capacity, and while relatively crude and not always leakproof, it does have the advantage of being inexpensive. Moreover, it is much simpler to fabricate the metal envelopes in Japan, instead of transporting them from the United States.

Fuel or Napalm?

The use of the present droppable gas tank has its drawbacks, for it involves the decision as to whether the tank will be used to carry gas or will be used as napalm bombs. This could have an effect on the amount of napalm that can be carried. The fact that no standard droppable gas tank is available for all types of aircraft further complicates the situation.

One solution might be the development of a universal type napalm bomb, with self-contained igniters, and fin-type assembly such as is presently used on the general purpose bomb.

How Effective Is Napalm?

Despite the mute testimony of effectiveness offered by the burned-out hulks of North Korean tanks littering the battle area, some fighting men and not a few scientists take a "show me" attitude when discussing napalm. This is only right and proper, because if all of the killing properties claimed for napalm were true we would have the so-called super weapon.

As might also have been anticipated, napalm has proved to be neither the super weapon claimed by supporters, nor the highly overrated weapon it has been considered by scoffers. Napalm holds a middle course between these extremes having been proved highly effective against unprotected troops, but not too effective against those dug-in and protected.

In Germany during World War II, na-



When used against targets that are vulnerable to fire, napalm has performed admirably. Above, a train, obscured by smoke and flames, being destroyed by direct napalm bomb hits.

Scoffers, as would be expected, are those who have not had the day-to-day contact with the employment of napalm against the enemy. They rightfully question the exaggerated claims of its effectiveness based on early returns from the Korean conflict, when all results, both good and bad, tended to be painted in colors either starkly white or deepest black. However, napalm has been employed in Korea for almost 3 years, and a true evaluation of its effectiveness should not be too difficult to determine by now.

palm tended to drive enemy troops to cover in pillboxes and other defenses, thus allowing our ground troops to advance against reduced opposition. General Bayerlein, commanding the Panzer Lehr Division, stated that "Napalm was of good effect on artillery positions in forests. Fire and smoke put the artillery out of action for a long time."

Fire bomb operations on the fortifications of Metz, however, had little or no effect on the defenses. Apparently those installations, equipped with mechanical

ventilation, were not affected unless direct hits were obtained on embrasures, ventilating ports, and other apertures.

Napalm strikes in the early days of the Pusan perimeter were extremely effective against North Korean troops in the open and contributed to the successful defense of the perimeter. With the static situation now in effect, however, with troops dug-in and protected by tremendous bunkers, the effectiveness of the napalm bomb as a killing agent has diminished.

In evaluating the effectiveness of napalm it must be remembered that even though the techniques of employment were established in World War II, because of shortages of gasoline and droppable fuel tanks, the Fifth Air Force was not able to give the North Koreans the "full treatment."

Most effective technique calls for employment of napalm in connection with high explosive attacks in the form of fragmentation bombs, mortar fire, and artillery fire. The target is first attacked with fragmentation bombs, and mortar and artillery fire combined. This attack is immediately followed by a saturation of fire bombs; then immediately after the fire bomb attack, the high explosive attack is repeated.

Napalm has proved an effective tank killer in conjunction with other aerial weapons, such as the high-velocity rocket and the .50-caliber incendiary bullet; however, when used alone against buttoned-up tanks it has not always been effective.

A World War II experience of the 3d Armored Division early in 1945 illustrates this point. Leading elements of the division encountered 10 *Mark VI* tanks. Column cover aircraft (*P-47s*) were diverted to knock these tanks out. The tanks were burning when last seen during daylight and were thought to have been knocked out by the aircraft. However, they were not "knocked-out"; merely burn-

ing from napalm which was the only ordnance carried by the aircraft. Later some of these same tanks played an active role in cutting up and severely damaging one of the division's tank columns.

Questions and Answers

It might be interesting to examine two questions frequently asked about the effectiveness of napalm: Does napalm kill by suffocation? Just how effective as an antitank weapon has napalm proved to be?

It is a well-demonstrated fact that a napalm bomb does remove the oxygen from the air in the vicinity of the fire. Rumor had it that North Korean tank crews died from suffocation, rather than from the burn effects, and for a long time this was accepted as the truth. Tests conducted by the Fifth Air Force in Korea showed the effectiveness of napalm against the tank, but failed to prove whether persons inside a tank under a direct napalm hit would die of asphyxiation from oxygen exhaustion.

It is known that a man can live for some time in an atmosphere containing considerably less oxygen than is required to run an engine. Then, too, the most intense heat of the bomb lasts for less than a minute, and most humans have little difficulty in holding their breath for that short a period. It is probable that the tank crews died as a result of a number of causes including suffocation and fear-caused heart failure.

Recent tests in the United States in which goats and sheep were passengers in radio-controlled tanks hit by napalm bombs disclosed that the animals were not affected by either the heat generated or through oxygen depletion.

That napalm *does* remove the oxygen from the air where the bomb bursts was dramatically shown recently at the Air Proving Ground, Eglin Air Force Base, Florida. An *F-84* had just dropped its napalm bombs when the second ship of

the flight flew through the burst. The burst caused a flameout from oxygen starvation. Fortunately, the pilot of the second aircraft was able to gain sufficient altitude in his pull-up to effect an air restart, and to land safely.

The question of the effectiveness of napalm as a tank killer also has come in

craft within the flight dropping their napalm. In actual combat, all aircraft within the flight generally drop their napalm in order to ensure that the tank is eliminated. It is difficult to hit a moving tank with one or two napalm bombs, but a flight of four aircraft can do an effective job of knocking out tanks. The



For accuracy and maximum effect napalm should be delivered from an altitude of 100 feet. Above, napalm bombs, dropped by B-26s, exploding on Communist barracks in Korea.

for study in an effort to divorce fact from fiction.

The tests mentioned concluded that because napalm hits failed to halt the radio-controlled tank and that the animals were unharmed that napalm was not as effective as it had been thought. However, as in most attempts to simulate battle conditions in a controlled test, the tests and the findings were both questionable. Strikes were made by pilots flying F-47 aircraft who failed to get many direct or even reasonably close hits. Only one aircraft was used on each test, instead of the normal technique of all air-

idea of a tank destroyed for each napalm bomb dropped is an interesting thought but little more. It takes teamwork and accurate bombing to accomplish a tank kill. Moreover, new tanks right off the factory assembly line were used, with a small amount of mud and grease inside. All hatches were closed and all stowage items such as ammunition, food, bedding, and other items normally stowed in the boxes atop the sand shields were removed. This served to remove the opportunity for near misses by napalm to set such top-gear afire. When fires were started during the tests, they were allowed to burn a

maximum of 1½ minutes, before being extinguished. Apparently, no account was taken of the tank-killing technique evolved by the Air Force which relies not only on napalm, but combines the fire-starting ability of napalm with the high-velocity rockets and armor-piercing incendiary .50-caliber machine gun bullets of the entire flight of aircraft to kill the tank.

Field Expedients

Napalm has also proved to be a versatile weapon in the hands of our ground force personnel. Again from Korea come reports of *fougasse* charges used in repelling attacks on front-line positions. The improvised *fougasse* consists of a napalm mixture armed with a white phosphorous grenade with a propelling charge all placed in a partially buried shell case or container. Set off by an electric detonator actuated by a trip wire, the *fougasse* throws a sheet of flaming gasoline a distance of about 50 feet.

A variation of this technique was reported in the November 1952 issue of the COMBAT FORCES JOURNAL in which a unit employed a 55-gallon drum of gasoline in place of the shell case, thus magnifying the effectiveness of the napalm.

Napalm has also been used in open con-

tainers as a battlefield illuminant, and it has furnished the heating element for many a dug-out, as it lends itself as an admirable substitute for fuel in the tent stove when the diesel supply runs low.

Future Trends

No one can predict the future of napalm. It is clear, however, that the optimum in development has not been reached. Much remains to be done in perfecting field mixing techniques, standardizing aerial containers, and in developing more effective dropping techniques.

It may be that a new alphabetical family of atomic weapons will appear on the scene to make napalm as outdated as Greek fire. Centuries from now, scientists and historians may in turn be searching the ruins of our civilization for the basic formula of napalm.

Whatever may lie in store, napalm has proved itself on the battle scene as an effective and a versatile weapon. When used against targets particularly vulnerable to fire, it has performed admirably. Its infrequent failures can generally be traced to attempts by enthusiasts to stretch the versatility of napalm to the breaking point by using it against unsuitable targets.

We seek to choose the most modern and effective weapons for the battlefield, which at the same time can be produced at the minimum cost and with the least impact on our national economy. We seek also to ensure that our Army personnel are trained by the most modern methods developed in educational research, and that their morale and psychological well-being—as well as physical well-being—are protected and preserved throughout their service in the Army. Above all, we seek to guarantee that the combination of men and machines for combat makes full use of modern scientific knowledge so as to ensure victory with the *least* cost in American lives.

General J. Lawton Collins

Railroading on the Mandalay Line

Leslie Anders
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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE strategic importance of the Burma Railway was apparent to American planners in the China-Burma-India theater (CBI) long before Lieutenant General Joseph W. Stilwell's Sino-American force laid siege to Myitkyina in the spring of 1944. In fact, CBI headquarters had begun laying plans in the spring of 1942 for the operation by the Military Railway Service of as much of the meter-gauge line to Mandalay as the allied forces would eventually recapture.

An inviting prey to Tenth Air Force formations since 1942, the Myitkyina-Mogaung sector of the line had reached an advanced stage of dilapidation when American engineer troops arrived in July 1944 to start its reconstruction. Numerous small bridges along the line had been a primary target of American bombardiers, so it was in the realm of bridge building that the engineers were to exert most of their efforts. In many places it was necessary to realign warped track. Elsewhere, wrecked or abandoned rolling stock had to be cleared from the rails. Where the roadbed was weakened by shell holes, erosion, or loss of ballast, much refilling and replacement was also vital.

The rehabilitation of the railroad began

on 15 July 1944, after a small advance party from the 504th Engineer Light Ponton Company was flown in from Ledo, India. The immediate mission of this unit was to get the line into operation between Namti and Myitkyina as soon as possible (see map on page 20). The long-range mission was to repair the track south from Mogaung whenever the British could drive the Japanese back on Mandalay. Reinforced immediately with a small detachment from the 236th Engineer Combat Battalion, the 504th Engineers in 3 days accomplished sufficient emergency bridge and track repairs to make possible a modest inauguration of freight and passenger service between Namti and Myitkyina.

The first "jeep-train," which made the initial trips from the airfield siding at Myitkyina to the railroad bridge outside Mogaung on 18 July, was a product of that ingenuity constantly displayed in the CBI by the American soldier.

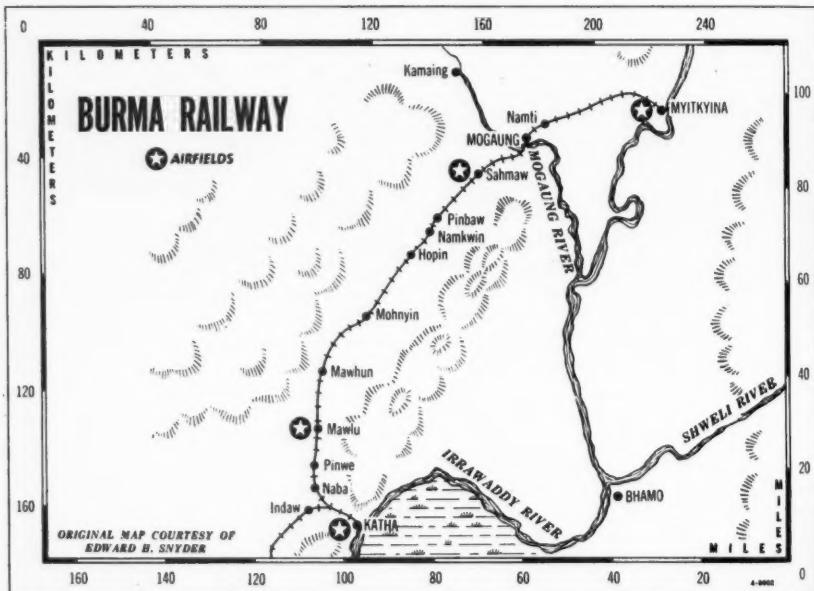
The train consisted of three sections. First came a jeep, equipped with flanged wheels, to provide locomotion. Then there was a string of seven $\frac{1}{4}$ -ton trailers serving as "freight cars." At the back of the train there was a second jeep, towed backward in order to serve as the "locomotive" for the return trip.

By 19 July, enough of the 504th Engineers were on hand to enable the unit to divide into a constructing and an operating section. The rolling stock seemed adequate, considering the circumstances in which operations had begun. There were

The rehabilitation and the subsequent operation of the battle-scarred Burma Railway reflects the ingenuity which was demonstrated continually by American soldiers who served in the China-Burma-India theater

at hand 4 heavy duty, four-cylinder Buda Railroad Scooters (property of the railroad), 6 jeeps, and 21 small trailers. The difficulty with immediate use of the Budas was that the bridges were not yet sufficiently strengthened for 15-ton loads. However, this was accomplished by 23 July; after that time the operating section

allies constantly "borrowed" lengths of 4-inch pipe—to make smoke-stacks in bivouac areas—one can imagine the consternation of the 504th Engineers operating party at the Chinese practice of putting sections of pipe on the rails to "see what happened." This led in August to several derailments.



usually made two round trips to Mogaung every day to bring personnel and rations to the airfield siding.

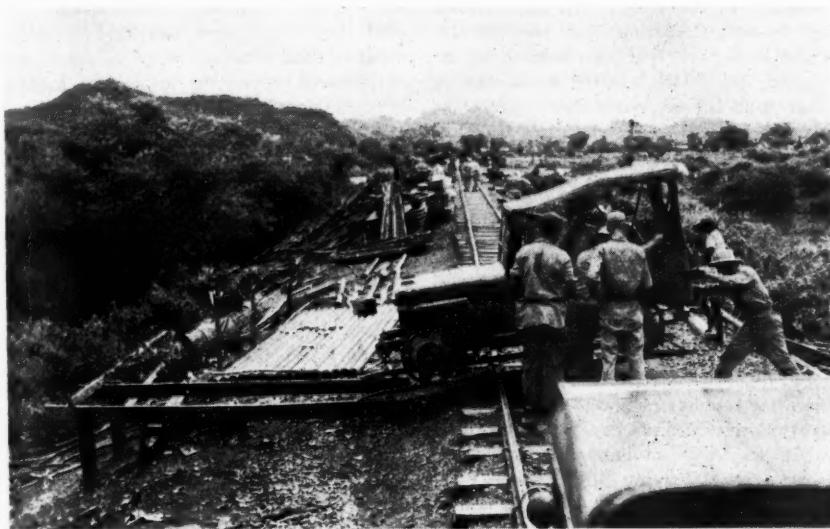
The increased speed and efficiency of freight operations was frequently offset by the mischief of the numerous Chinese soldiers along the right of way. If the American pipe-line engineers along the railroad were rather disturbed that their

On 22 August there were two head-on collisions, when the Budas struck a trailer and a flatcar being pushed along the track by two parties of enterprising Chinese. The departure of the main body of the Chinese for resumption of full-scale offensive action on the road to Bhamo soon resolved this crisis, however.

First Mission Accomplished

During the last 2 weeks of the siege (which ended on 3 August), the 504th Engineers completed the rehabilitation of 32 miles of track and repaired the damaged bridges. Ballast was replaced and the rails were straightened. On the bridges it was

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The strategic importance of the Burma Railway necessitated its rehabilitation. The "jeep-train" was a step forward in the reconstruction program. Above, a "jeep-locomotive" being put on the rails. Below, the "jeep-train" with a load of allied soldiers ready to make its run from Myitkyina to Mogaung in Burma.—Department of Defense photos.



necessary to realign girders and trusses and to build cribbing and trestlebents. Where steel parts had been bombed out or removed, the 504th secured replacements either from the engineer depot near Ledo or from the beds of wrecked rolling stock along the tracks. Steel thus salvaged was cut with acetylene torches and welded in place by arc-welders.

Some of the work nearest Myitkyina had to be done under Japanese fire, for almost until the last day of the battle enemy artillery desperately strove to interdict American use of the captured railway.

The incoming detachment of Military Railway Service (MRS) took over operation of the rebuilt line in mid-August. That the Myitkyina-Mogaung sector of the Burma Railway was an important logistical asset to the Myitkyina Sub-Depot is evident from the increase of tonnages delivered by MRS from Mogaung during the succeeding months. The steady rise in capacity is graphically illustrated by these representative figures on daily deliveries:

16 August 1944	49 tons
22 August 1944	110 tons
5 September 1944	200 tons
11 October 1944	373 tons
10 November 1944	555 tons
10 December 1944	1,376 tons
31 December 1944	1,749 tons
10 January 1945	20,075 tons

South of Mogaung

The end of the siege of Myitkyina ushered in a new phase of the allied struggle to expel the Japanese from Burma. General Stilwell's Sino-American force now resumed driving the enemy southward down the Irrawaddy Valley toward Bhamo. To the west, the British 36th Infantry Division in August undertook an offensive down the Burma Railway "corridor" from Mogaung to Katha.

Mogaung itself was the first great bottleneck in the way of extending railway operations toward the south. A reconnaissance party from the 330th Engineer Gen-

eral Service Regiment learned in mid-August that there were two bridges to be repaired there before even a jeep-train could move beyond the town. One bridge, over the Mogaung River, was on the northeastern edge of Mogaung; the other, over the Namyin, was in suburban Loilaw, on the southwestern outskirts. Company A of the 330th Engineers had the Mogaung River structure aligned by 25 August, at which time it turned over the remainder of the work there to the 504th Engineers and undertook to get the much-battered Loilaw bridge back into shape.

American bombers and Japanese demolition parties had carried out a rather effective destruction of the Loilaw bridge the previous spring. The pony truss span, and the two deck plate spans adjoining it, had been destroyed. The trestle approach was ruined also. However, the girder spans on both ends were still in place and in fair condition and six brick masonry piers and a masonry abutment still stood.

To rehabilitate the structure the engineers placed an 86-foot welded I-beam approach on timber and steel pile bents on one end and a 23-foot welded beam girder span on the other. It proved possible to salvage and refabricate the 44-foot intermediate deck plate girder spans. A fixed 20-ton bridge resting on a pair of intermediate pile supports replaced the old 107-foot span over the main channel. The first jeep crossed the rebuilt bridge on 16 October—the first locomotive just 4 days later.

The men from the 330th Engineers left Mogaung in October to resume work on the Ledo Road. The 504th Engineers moved down the line through Sahmaw and Pinbaw to Namkwin in early October to join the 36th Division's sappers in the reconstruction of the railway toward Katha. At Namkwin the entire company was reassembled, and the company commander reorganized the efforts of the unit along these lines:

1. Two construction crews to rebuild the bridges and repair the track toward Hopin.
2. A salvage crew to extricate metal parts from nearby wreckage for use in bridge reconstruction.
3. A detachment to carry out final repairs on bridges.

However, after rebuilding six bridges between Namkwin and Mohnyin in November and moving south to Mawhun, the 504th received orders to operate the Mohnyin-Mawhun line in addition to the assigned construction work.

Operational Difficulties

The operations officer, in spite of a bizarre chain of adversities, managed to maintain his schedules and avoid injury to his men. Steep grades on the Mohnyin-Mawhun sector caused several accidents, since the light jeep-locomotives were unable at times to keep on the track at the high speeds caused by downhill runs. Unexpected obstacles on the track led to several derailments.

Anonymous acts of sabotage occurred, such as the tying of chains and pieces of wreckage on the tracks. Unfortunately, quick stops by jeep-locomotives were out of the question in view of the momentum of the heavy load behind. In such cases derailment was inevitable, and the alerted crew would jump clear of the train in time to avoid injury in the ensuing pileup. Several derailments resulted from collisions with stray elephants and water buffaloes.

Sharing the task of rebuilding the Burma Railway were the Royal Engineers of the 36th Division, aided by a party of about 70 Indian pioneers and 100 native trackmen. The British-Indian engineering

force was obliged to give combat-engineering support to the division, but it was usually able to detach sufficient strength to play a prominent part in work on the railroad. American aviation engineers, it should be added, also carried out a crucial mission in support of the advance, for the 879th Engineer Aviation Battalion built combat-support fields at Sahmaw, Mawlu, and Katha.

In December, the project was hurried toward completion. The 504th Engineers, using salvaged materials, repaired two bridges between Mawhun and Mawlu. By 20 December, steam locomotives were able to reach Mohnyin, and jeep-train operations were in progress all the way to Naba by Christmas. As of 20 December, an average of between 100 and 150 tons of supplies daily moved south from Mawlu toward the front. The 36th Division sappers and the 504th Engineers redoubled their efforts in the final days of 1944, and announced the completion of their project as far as Katha on 7 January 1945.

The opening of traffic to Katha marked the end of the 504th Engineers' participation in work on the Burma Railway. Over the railroad they had done so much to rebuild, the Americans traveled north that month to rejoin their own forces at Myitkyina.

The commander of the Myitkyina Depot on 9 January 1945 wrote:

The 504th Engineer Light Ponton Company deserves commendation for . . . outstanding service . . . in the reconstruction and operation of the Burma Railway. This railway is a vital link in the supply of combat, air force, and service troops in the forward areas. Although this organization is not equipped, trained, or organized for railway reconstruction and operation, it took in stride the assigned mission, successfully completing each task.

STRATEGIC WITHDRAWALS

Guenther Blumentritt, General der Infanterie, *Former German Army*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

SMALL-SCALE withdrawals during a battle or an engagement are tactical means of combat which every skilled, independently acting officer is permitted to employ, provided he reports them to his superior.

This article will deal with strategic withdrawals—not those which are forced by the enemy—but those which are carried out on free, sovereign will, with the object of disengaging from the enemy in an unfavorable situation, to regain freedom of movement, and to initiate a completely new operation under better conditions.

Great military men under such circumstances give the order to withdraw without any prejudice, just as they would order an attack or a defense. It shows a great, liberal spirit to break off voluntarily a battle of annihilation which has lost all prospects of success in order to disengage from the enemy and then withdraw to commence a new operation under more favorable conditions. It does not denote spirit to let one's troops be butchered in a hopeless battle and thus give up all chance of victory.

Modern warfare makes this type of battle especially necessary.

The larger the available strategic area, the larger the strategic withdrawal may become; the smaller the area, the more the withdrawal will assume tactical size.

Up until 1914, the old German fundamental principle of leadership was "When withdrawing, withdraw quickly and far."

It was considered that only this procedure permitted a strategic disengagement to be effected and freedom of movement to be regained. From the point of view of morale, a voluntary withdrawal of this type will have no effect upon a psychologically strong army. Quite the contrary, the army senses that it has the right kind of commander and feels that it is being led by a great military leader.

World War I

During World War I, there was no dictatorship and no pressure upon the military leaders. The Kaiser did not interfere with the military conduct of the war—the German command was given free rein.

In 1914, as an infantry lieutenant, I took part in the great strategic withdrawal from the Vistula and the subsequent renewed, rapid counteroffensive on Lodz. Our troops never doubted for a moment that Hindenburg knew what he was doing, and that the withdrawal (involving long marches) was indeed necessary. Admittedly, the troops must have confidence in their leaders.

In October 1914, the campaign in Poland had taken a strategically unfavorable turn. The entire Austro-Hungarian Army had been driven back into western Galicia and the Carpathian slopes, with heavy casualties, by Russian forces.

The German Ninth Army also had been forced into a difficult situation. Against this army—consisting of the XI, XVII, and XX Corps, a reserve guard corps, and a few cavalry divisions—the Russians had begun a large-scale, strategic encirclement from the north. The Russians had about five divisions for each German division.

The numerically superior Russians advanced from the area west of Warsaw and attacked the northern flank. Other forces advanced from Deblin.

Had the engagement not been broken off, and a new one initiated, the German Ninth Army would have been encircled and the road to the German border would have been open. Adherence to our positions would have increased the danger day by day, and, therefore, Hindenburg and Ludendorff made a far-sighted strategic decision. Rear guards were detailed to delay the enemy, while the bulk of the Ninth Army was withdrawn westward, by tremendous marches, behind the German 1914 frontier. The Ninth Army was then transferred, without rest or relaxation, on German territory, by train and on foot, to the north. There, it was once again committed, broadly wheeling toward the east, so as to strike south from the line Konin—Kolo—Kutno—Lowicz. This led it deep into the flank of the Russian forces which had advanced slowly as far as the Warta River. This withdrawal, transfer, and wheeling thrust had proceeded so rapidly that the Russians were able to recognize the danger which threatened *them* only after the new attack from the north was launched. Thus, the battle of Lodz was initiated.

This strategic withdrawal may well be regarded as one of the most masterful examples of leadership and assumption of

drawal was hesitant. Consequently, there was never any actual disengagement from the enemy. Behind the Aisne we dug in and attempted to outflank the Anglo-French front tactically with single corps approaching from the north—which we never succeeded in doing, and which gradually extended the front lines of both sides in the “Race to the Sea.” Position warfare had been born, and strategic mobility was dead.

The German forces should have made a quick strategic withdrawal, right up to the Maas, and then launched a counter-offensive from the south with all available forces. On the Western front, with its excellent system of roads and railroads, this could have been accomplished more easily than in pathless Poland.

After 1915 a free strategy was no longer possible because of the stagnated fronts. Admittedly, during the course of the war, withdrawals were carried out repeatedly by friend and foe alike, but these were either purely tactical, or they were involuntary, and out of these no decisive counteroffensives were started with any success.

World War II

During the Polish campaign of 1939 there were no strategic withdrawals. Strategic withdrawals were unnecessary for the Germans; the Polish withdrawals were

Strategic withdrawals are those which are carried out with the object of disengaging from an enemy in an unfavorable situation in order to initiate a completely new operation under more favorable conditions

responsibility in modern military history, and a record performance for the troops that carried it out.

The German withdrawal to the Aisne reflected the lack of strategic thinking on the part of the Germans after the Marne withdrawal and was not so voluntary or organized as the one in the East. The with-

forced upon them and, therefore, were not strategic.

During the campaign in the West in 1940, there were no strategic withdrawals because the French withdrawal was made under pressure. In 1944, the German High Command was forced to effect a withdrawal because of the invasion in the West.

British in North Africa

The withdrawal of the British forces in North Africa in the second half of 1942, I regard as a conscious, voluntary one. The British withdrawal in the first half may have been enforced by Field Marshal Rommel, but I believe that thereafter the British Command put a stop to the pressure from the west along the coast, by a withdrawal which was executed according to plan. The British withdrew a long way—right up to the western border of Egypt. Thus, they returned to their base—their power source in Egypt.

Rommel, on the other hand, necessarily became weaker and weaker, in proportion to the length and complexity of his supply lines. It was the British Navy and the British Royal Air Force who were masters of the Mediterranean, and not the German-Italian combination. Their supply of fuel, ammunition, and logistical support became more and more scanty and the *Luftwaffe* weaker and weaker. In 1942, the German forces in North Africa also began to lose their impetus. However, under the unaccustomed circumstances and conditions which they faced in Africa, their performance was certainly very high.

In 1944, Marshal Rommel often related

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to me how seriously he had pointed out the difficulties regarding manpower and material resources, his missing supplies, his weakening allies, and the delicate interrelations of power and authority at the *Führer's* headquarters.

Field Marshal Montgomery's planned counteroffensive, therefore, anticipated the successful meeting of fresh, rested British troops with a weakened German enemy which had advanced too far.

So far as I am able to judge therefor, I would term the British plan a sure coordination of a strategic withdrawal followed by a voluntary counteroffensive. That the strategic move did not become a matter of large-scale outflanking movements, but only of small tactical ones in the south, through the desert, is a consequence of the peculiarities of the North African terrain and of the lines of communications, which in theaters of operations outside of Europe always played a decisive part.

The Eastern Front

Of much greater interest is the "strategic, voluntary withdrawal" on the German Eastern front during 1941-45.

There was, unfortunately, no scarcity of room for the operations. Whether a voluntary withdrawal on this front should take in 50 or 300 miles was not a problem of importance.

It cannot be said that the Soviet retreat far eastward in 1941 was similar to their voluntary one of 1812. On the Soviet side of the border they had had very strong forces for many months before the Eastern campaign ever started—much stronger forces than the few German divisions which were stationed on and to the west of the Bug River. Particularly in Galicia, the Soviet divisions were stationed close together—one behind the other—from Przemysl right up to Lemberg.

The great and heavy frontier battles of Army Group South, the tenacious resis-

tance of the pockets encircled by Army Group Center, and the battles of Army Group North prove that the Soviet Command did not in 1941 withdraw voluntarily with large-scale strategic objectives in mind.

Especially on, and later east of, the Dnepr the Soviets fought gallantly and tenaciously to the last man.

If they had had any intention of letting us go farther and farther toward the east, and then—as with Napoleon in 1812—attacking us with an unbeaten force, they would not have sacrificed a million casualties in the pockets of Kiev, Smolensk, and Vyasma.

Captured Soviet generals told us in Smolensk that it had been Marshal Stalin himself who had given moral support to his already discouraged generals. It was at that time that the dictatorial order to hold out to the last man was first made. This certainly indicates that the Soviets had not decided to embark on a strategic withdrawal in 1941. On the contrary, they tried their best not to retreat any farther.

After the gigantic pocket of Vyasma had been cleared in front of Army Group Center, there remained only local resistance between our troops and Moscow. Only on the Nara—about 17 miles west of Moscow—did the Fourth Army encounter coherent positions. All dispatches from Moscow in early November revealed great unrest, including evacuations of the city by some of the diplomats and departments of the Government.

Once again, however, the German Army was overstrained. The enormous hardships encountered from the Bug to the gates of Moscow; the long weeks of bitter fighting with a tough, insensible enemy; and the mud—from mid-October on—had played havoc with our troops.

Once again we had to pause for breath just short of the objective. Our pause—caused by the mud—was well used by the Soviets to dig in, in a semicircle west of

Moscow; to shift about 100 divisions (beside the home guard) from other parts of the front and elsewhere.

This performance is remarkable, and could have been effected only by a dictatorship, and even then only by *levée en masse*.

The mighty counterattack which was initiated in December 1941, from the Moscow region, was not a planned one. It was not a follow-up on a long, previously planned withdrawal. It merely arose from immediate necessities. It succeeded in its task, which was to save Moscow, and was thus a historic accomplishment for the Soviets. It constituted a serious threat to us during the famous winter of 1941-42, but it did not defeat us and, therefore, had no strategic success. The total result of the murderous winter battles was that at their end, in January 1942, the new German line ran along the Ugra. That was not remarkable in view of the events and considering that 100 Soviet divisions had been committed against 30 tired German divisions.

In 1941, the Commander in Chief of the German Army, Field Marshal Walter von Brauchitsch, was dismissed and the *Führer* appointed himself as Supreme Commander. From then on all “free” strategy was dead. The *Führer’s* fundamental principle was “to remain, at all costs, on ground which has once been won.”

Now the picture changed upon the German maps. Pockets could now be seen forming on the German side (as had occurred previously on the Soviet side). The results were heavy losses in men and materials. The Soviets could have afforded these losses but we could not. Everything had to be “held” including bridgeheads which had no tactical value and areas of no strategic importance. This led to intolerable losses. The German High Command did not fail in 1941-42, it was simply not allowed to plan its strategy; it had to “stay put” in quite impossible positions.

In 1914-18 we would have acted differently in a similarly confused situation; we would have reacted strategically, in a more mobile way. The huge spaces of the Eastern theater would have permitted the most daring operations at a relatively small risk. We could have taken advantage of our great mobility—far superior to that of the Soviets. Our troops would have grasped the point immediately, and having confidence in their leaders they would have taken an unexpected turn—for our troops never did lose the feeling of tactical superiority over the Soviets.

What Could Have Happened

I will leave all political considerations aside, and discuss only the purely strategic, military possibilities. I do not propose to discuss here the fact as to whether the German High Command—quite apart from the political leaders—had staked the objective much too far ahead. Our strength at the moment of crossing the Eastern border in 1941 was no longer what it had been in 1940 in the West. The gigantic front of the three army groups no longer had the depth nor the many reserves that existed during the Western campaign.

The battles up to the Donets basin in the south, up to Moscow in the center, and up to Leningrad in the north had been tough and heavy. There were only a few days without enemy interference. The country, its climate and roads, had greatly sapped the strength of our troops.

Again and again the German High Command had hoped that the next battle would be decisive and thus the inadequate German forces were driven even farther eastward—with their supplies deteriorated and their lines of communications extended. It was thus that two costly months (August and September) passed by in strategic uncertainty.

We did not assemble for combat until 2 October. The German forces were then caught by the autumn mud, which placed

a considerable burden on the troops. Finally, during the Russian winter, we were stopped just in front of Moscow, Leningrad, and the Donets. This we were ill-prepared for, from the point of view of clothing and equipment. Although the winter brought only relatively light snow the temperature was extremely cold.

At this point the great Soviet counter-attack was launched from the Moscow region.

One hundred or more divisions—some of them quite unknown to us—made a surprise thrust out of the Moscow area, despite the fact that our propaganda had stated that the Soviets were on their last legs. Not all these enemy divisions were complete. Nevertheless, they were far superior, in numbers and in winter equipment, to the fatigued and weakened German divisions.

Generally speaking, the front line, in December, ran north from the Donets, through the region east of Kharkov, then through Kursk, Orel, east of Kaluga, east of Rzhev, Ilmen, and to the west of Leningrad. This front was about 930 miles in length, as the crow flies, but owing to very large salients, it was in actuality much longer.

If each division had been assigned a 12-mile sector, almost 100 divisions would have been necessary to defend this front. However, even then no large-scale reserves were in existence, and to defend 12 miles with such weakened divisions, in ice and snow, would have been impossible if the Soviets had decided to attack in mass at any one point.

However, the new principle of conducting battle was "an inflexible stand."

Consequently, on some sectors of the front, especially in the center, there were great losses of men and matériel.

In this situation the German forces should have maintained a strategically flexible defense at least until the spring of 1942.

A responsible supreme commander for the Eastern front, with authority and freedom of action, should have been appointed. The ideal man for this job would have been the strategically talented Field Marshal von Rundstedt, who was well acquainted with the East from two world wars, and who, moreover, had the confidence of the German forces on the Eastern front.

Because he was sick during that period, the second choice should have been the operationally well-trained Field Marshal von Manstein. A third choice might have been Field Marshal von Kluge.

The directive to effect the necessary change might have been short, stating:

It is of signal importance that the strength of the German forces in the East be preserved by all means. The campaign in the East is to be conducted in accordance with the immediate directions of the Commander in Chief for the East until the spring of 1942, and in accordance with the situation existing on the frontal sectors. A withdrawal west of the Dnepr-Duena is out of the question. All changes in strategy are to be reported as they are made. A new directive will be issued for 1942, tying in with the development of the situation.

Freedom of action could have been thus safeguarded.

Wherever the Soviets did not attack, or did so only lightly, the front could remain stationary. However, wherever they attacked in strength, tactical fighting withdrawals could have been effected. Then there would have been no pockets and no encirclements—it would have been possible to withdraw in plenty of time to maintain straight lines. Personnel and equipment could have been spared, and the confidence of the men could have been raised considerably.

This tactical mobility and freedom of action would have been possible because the Soviets were fighting very slowly and carefully, and in addition our routes of supply would have become shorter.

On the other hand, should a sector have been gradually withdrawn tactically dur-

ing the winter to such an extent that adjacent, lightly attacked sectors were endangered in consequence, then these two would have to be withdrawn even without combat.

All that was needed for the entire Eastern front was to fix and reconnoiter two or three major lines up to the Dnepr-Duena. That would have been sufficient—it would have been impossible to do more than that in the winter of 1941-42.

A large-scale, strategic, voluntary withdrawal was out of the question for two reasons:

1. A new operation could not have been initiated during this winter. In the winter battle in Masuria in 1915, we experienced the tremendous difficulties of such a campaign and we knew how slow and troublesome it could be, and how few advantages it carries, because there was no strategic mobility. A strategic withdrawal has sense only if the campaign is to be given up entirely, or if a new operation is to be started by the withdrawal. Neither was the case in 1941-42.

2. A strategic withdrawal according to the principle of "quickly and far" was unthinkable. Snow and ice did not permit the marching of more than 12 miles daily on the part of the infantry divisions—on roads which had been cleared of snow. On roads covered with snow and ice we hardly did as much as 6 miles a day. Because of the exhausting conditions, after only two or three long marches, the German forces would have been finished.

Only a very few roads were available for the motorized units. They could have been withdrawn over these roads, but they could not be expected to move forward.

There remained in 1941-42 only the compromise we have discussed: preparation, and maintenance of the front.

The history of this Eastern campaign shows that the most heavily attacked central front—despite heavy losses—still remained on the Ugra in the spring of 1942.

That is to say that it had been pushed back only about 90 miles, after long months of heavy fighting.

Had a flexible command been permitted, this portion of the front could have withdrawn, fighting, but still coherent and without being badly weakened, up to the Desna, and to the north of it.

Plenty of space would still have been left between this and the ultimate line Don—Duena, however, this space would not have been required.

Possible Results

If the outlined plan had been followed the results could have been:

1. An army with full fighting power.
2. Troops confident in their officers.
3. The regaining of a feeling of tactical superiority over the slow-witted Soviets.
4. Comparitively slight loss of terrain.
5. Improved supply lines.
6. The prerequisites for new strategic moves in 1942, in case the politicians had insisted on carrying out their intentions.

In other words, if it had been necessary to continue operations in 1942, then it was most important that the entire war in the East be conducted in a strategically mobile manner, as far as possible, and with two aims in view:

1. To conserve our strength as much as possible.
2. To weaken the enemy's army in the field, the very active existence of which had been demonstrated during the winter of 1941-42.

This could have been accomplished only by starting operations in May or June and ending them, at the latest, in October.

Thus there were 4 or 5 months during which there was a possibility of conducting operations. Should success still not have been attained, and should the war not have been terminated by political measures, then we would have had to revert to tactical mobility in 1942-43 in order to conserve our limited strength. The entire Eastern

campaign would thus have become an extended war of attrition.

The bulk of the motorized divisions could—with a mobile, tactical, and economical conduct of battle—very well have been withdrawn and reconditioned far behind the front during the mud period—during which even the Soviets were less mobile.

The various divisions newly set up between 1941 and 1942—of which there were at least 20 or 25—could likewise have been moved from the zone of interior, eastward behind the front. Here they could have had plenty of room and opportunity for further training in accordance with the physical conditions of the East.

Railroads and supply facilities could have been restored and put into working condition by the time the operations were to begin.

Our aim would have been to weaken the enemy by a strategic conduct of battle and to conserve our own forces. Areas and objectives would have been of no importance. As there was then probably no certainty in 1942 of the enemy's intentions, all that could be effected was a large-scale, strategic assembly.

Two large groups should have been formed from the bulk of the motorized divisions, the newly organized divisions, and possibly a number of divisions which could be spared from the front. These groups were:

Group 1—generally in the area Kiev—Vinnitsa—Dnepropetrovsk—west of the great Dnepr bend.

Group 2—generally in the area Vilnyus—Minsk—Mogilev—Polotsk—west of the Upper Dnepr and the Drina.

The Plan

If the Soviets had attacked, there would have been plenty of time to assemble these groups in such a way that they could have been used—all according to the development of the situation—to go over on the counteroffensive and to hit the Soviets at

whatever spot they were strategically the most sensitive.

However, if the Soviets had refrained from attacking we would have had to assume the offensive in June.

To plan the operation theoretically at the time was pointless, since it depended entirely on the situation and the information which we would be able to obtain. It was, however, probable that the Soviets—should we have taken the offensive—could have advanced strong forces along the line Smolensk—Orsha—Minsk, as this region offered the best road and rail facilities.

Also possible was a further attack with its focal point in the south, into the Ukraine, on the line Kiev—Lemberg.

Both groups could have been so assembled that they could strike the Soviets either in their own move or could come into play on a front of our choosing, which could have been decided after our initial tactical break-through.

If the campaign of 1942 had had, as its consequence, a useful political achievement—the cessation of hostilities—then the ultimate would have been attained.

However, if the military successes once again had been inapplicable politically, then 1942-43 would necessarily have seen a repetition of the events of 1941-42.

In 1942 we continued to attack long-range objectives with progressively weakening forces. These objectives could not have been reached, and more important, could not even have been held during the winter of 1942-43 without suitable positions and supplies.

That the German forces even as late as 1942 were still capable of action—despite their heavy losses in the winter of 1941-42—was shown by the surprisingly rapid initial successes in their drive toward the Caucasus, almost up to the mouth of the Volga, and on the Don. All of this was accomplished in June, July, and August. On the attack, the German forces of 1942

were still astonishingly good. However, they were weak when it came to inflexible defense in lines without any depth, and without any shelter against the winter.

When it became obvious that our forces were bleeding to death in the western Caucasus, that it was impossible to hold on to the lower Volga east of the Calmu steppes, that Stalingrad could not be expected to be taken, and that the long course of the Don could not be held by even many Hungarian, Italian, and Rumanian divisions without the support of German units, the only thing that was left for us to do was to withdraw strategically back to a closed line in the West.

Thus, as history has shown, the winter of 1942-43, and particularly Stalingrad, was a heavy blow to the German forces in the East and one from which they were never to recover completely.

I, personally, did not experience the years from 1943 to 1945 on the Eastern front.

The German forces in the East were still powerful enough to hold out for another 2 years, even though they were fighting withdrawing actions—an unsurpassed performance. They still felt tactically superior to the enemy even though they were no longer a strong instrument of offensive strategy after 1943.

It may be said that these ideas are based on hindsight, but that is not true. In 1941-42, similar ideas were much discussed by the staffs of our corps, armies, and army groups.

Still, in December 1941, before Moscow, Army Group Center issued an order to the Fourth Army, ordering it not to allow itself to be encircled by enemy forces crossing the Oka (near Aleksin) and Tarusa, but to withdraw, by short marches, behind the Ugra.

The orders had been issued, the heavy artillery had been moved westward, the new Ugra position had been reconnoitered, and the roads to be used by the corps had

been cleared of snow when the *Führer's* order was received stating that "Fourth Army will not move back a single step."

Thus it came about that these courageous divisions fought for every foot of the ground—and by so doing the entire army was squeezed in like a horseshoe. The Roslavl-Yukhnov-Maloyaroslavets road was the only route of supply left for the Fourth Army.

The Fourth Army was not annihilated at the time because the Soviets had executed an encirclement without sufficient impetus or energy. It eventually came to a standstill.

This was the beginning of our future leadership. If the Fourth Army had been allowed to withdraw behind the Ugra, it could have saved many of its men and almost all of its equipment, and the front could have been straightened considerably. The ground which was lost was worthless anyway.

After Field Marshal von Brauchitsch was dismissed, we were required to hold many unnatural positions, which caused heavy losses—apart from the lengthening of the front.

The same things were also to happen in other theaters of war. On the Western front in 1944 such pockets as Falaise, Avranches, Caen, St. Lo, the one west of the Rhine, the one after the failure of the Ardennes, the one east of the Rhine, and in the West Wall occurred only because of the "stay put" order.

It was not the German military leaders who failed after 1942. The blame must be laid on the unnatural rigidity commanded by a dictatorial leadership. All of Europe was defended in this way.

The question will arise as to whether any German military leader ever verbally opposed this method. This happened even before 1942—often and by many officers—but in vain. Usually the officer would be dismissed, and a successor would be appointed. Top-ranking officers sometimes

changed several times during a single year for this reason.

In 1941 we were surprised to see how the political leaders in Moscow had forced the same pockets on the Soviet military leaders—with perhaps even more drastic measures. This was revealed to us by captured Soviet officers. After 1941-42, we were to learn for ourselves what this was like.

Deductions

Without free, independent strategic responsibility—uninfluenced by pressure and fear—no general is in a position to gain successes in the field.

All really great soldiers of international military history were inwardly free men, deriving pleasure from their responsibility. Either they were the top politicians or statesmen of their country or they required an understanding political leader, without such coercion as we have discussed. Strategy means mobility. Mobility prevents losses and brings successes. Inflexible holding brings the exact opposite.

Conclusions

The purpose of this article was to discuss those strategic withdrawals which are carried out voluntarily and for the purpose of introducing a counteroffensive.

After 1943 the German Army was no longer capable of a strategic withdrawal—its personnel and material strength were too low.

The withdrawals initiated by the Germans from 1943 onward were no longer entirely voluntary; they were forced upon us by the enemy. A tough, slow, brave but hopeless retreating battle best expresses our actions in all theaters of operations.

The close and uninterrupted connection between the leading politicians of previous times and the executive soldier was no longer in existence.

In 1943, in spite of Stalingrad, there was still plenty of room for operations behind the front. If the fighting was to

be continued merely for the purpose of gaining time, there were still a number of natural lines to which we could have withdrawn.

In the East

The early fighting could not have been conducted in any other way than was previously described—tactically free and mobile. In this manner the fighting strength of our forces could have been preserved and maintained to as great an extent as possible. Fighting this way, the German forces in the East could have been able to hold out much longer—to fight for time.

The suggestion was repeatedly made, after the spring of 1943, that construction of an East Wall be started immediately—with all forces available. The suggested line ran from Lake Peipus, through Vitebsk, Orsha, and along the Dnepr right up to the Black Sea.

I, personally, do not think much of these "lines," but they would not have done any harm and would have offered at least a temporary halt, corresponding to the purpose of the whole process of these battles.

But these precautionary measures were curtly rejected by the *Führer* who would not permit even the thought of a withdrawal.

I think, however, that it was then too late anyway to construct fortifications that would have been strong enough to hold the enemy for any considerable period of time. I also think the line Tilsit—Kaunas—Grodnno (Niemen)—Brest Litovsk—along the Bug to Lemberg-Stryy, joining up with the Carpathian range, would have been appropriate. Another choice might have been the line Tilsit—Angerapp—the Masurian Lakes—Narew—Warsaw—along the Vistula up to the north of Dunayec—the High Tatra. Both these lines are short; make use of favorable terrain (rivers, lakes, swamps) as well as of old, but still surprisingly resistant, Russo-Polish forts; and permit the release of considerable re-

serves behind the lines. To construct and improve these lines we had almost 2 years at our disposal, and the routes between them and the home country were short.

Admittedly they would not have afforded absolute protection indefinitely but they would have saved us a considerable amount of time. They would certainly have been defensible by 1944.

Independent of these and uninfluenced by them, the battles in the East could have been conducted slowly, but with mobility. By thus preserving our fighting strength, the Soviets could have been prevented from reaching these positions until 1944 at the earliest.

It must also be considered that on the Eastern front there was no enemy air superiority—as there was on the Western front—and that Italy did not decisively influence the course of events here. However, with the campaign on the Eastern front handled as it was, each new Soviet offensive cost the German Army considerable losses in strength because all units had to remain *where they were*. When the *Führer* finally permitted a limited withdrawal of a sector of the front, it generally came too late as the encircling movement had already progressed too far. The "dashbacks" caused us as many casualties as they had cost the Soviets in their pockets of 1941. Thus the German strength dwindled with every backward step.

The afore-mentioned Soviet fortifications on the Narew and the Bug could at that time still have played a significant part. It is interesting to note how tough these old fortifications—modernized between 1815 and 1890—were. In 1915 the 420- and 350-mm mortars of that time scarcely penetrated them at all. At that time the forts exacted a heavy toll of casualties.

In 1941, the strength of the old citadel of Brest Litovsk was astoundingly high. It was more than 100 years old, cleverly built into the tributaries of the Bug, and entirely covered irregularly with trees and

bushes. The mighty walls, covered by high overgrown earthworks, and the deep subterranean bunkers could not be destroyed even with the strongest of weapons.

The citadel was held for 8 days against heavy aircraft and artillery bombardment. When it finally was captured each bunker had to be taken separately by engineer troops. Compared with the Maginot Line, the German West Wall, and the Atlantic Wall, this old core of the Russian fortification system was surprisingly resistant.

In the West

So many officers have elaborated on the West, and in such detail, that I do not feel I need to go into the matter here.

From the point of view of the German command in the West, the extensive coast lines of France, Belgium, and Holland would have been indefensible under the restriction imposed by the *stand fast* order. It would have been impossible to hold such a vast stretch by thin lines.

The German commander in the West, Field Marshal von Rundstedt, wanted, in the event of an invasion, to secure the coasts only by coastal divisions, permanently stationed along them, in order to hold up the enemy or slow his landing operations. All of Southern France was then to be given up, and all German troops loca-

ted there were to have been moved northward into the area east of Paris. The panzer divisions also would have been assembled in this area.

Then a corresponding counteroffensive with strategic mobility against the enemy advancing eastward from the coast was planned to be carried out in accordance with situational developments.

Should this prove to be unsuccessful, or should the allied air superiority prevent all large-scale strategic movements on the German side, then there remained withdrawal—first onto the line Antwerp—Namur—Masd—Nancy—Epinal—Belfort, and finally on the West Wall. A coherent evacuation of the Western areas could thereby be effected—all further measures were a matter for the politicians. The Rhine was an ideological line—without any real value.

The external theaters of war—Norway, Italy, and the Balkans—were to be evacuated accordingly.

A liberal directive for the Western theater was repeatedly requested. The final request was made through Field Marshals von Rundstedt and Rommel in the presence of the *Führer*. The request was curtly rejected. Because of the discussion Von Rundstedt was relieved and Rommel fell into disfavor.

CORRECTION

The pictorial article "Beachhead," which appeared on page 41 in the August issue of the MILITARY REVIEW, erroneously stated: "Once the shore party has engaged the enemy . . . helicopter-borne troops are landed behind . . ." This statement should have read: "At the time the assault troops are engaging the enemy . . . helicopter-borne troops may be landed behind . . ." The picture caption on page 46 should have read: "Helicopter-borne troops may be landed behind the enemy . . . at the time the assault troops are engaging the enemy . . ."

Alaska--Barrier or Gateway?

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IS ALASKA to be our Gibraltar of the north, or merely a large piece of real estate which may serve as a stepping stone to invasion through the northern back door to Canada and the continental United States?

Ever since our purchase of Alaska from the Russians in 1867, it has been regarded as a stepchild among our possessions. It has long been called "our last frontier" and there has been little appreciation of its military significance until comparatively recent years. It is significant that as recent as 1939 our Alaska garrison consisted of a pitiful 300 soldiers.

The strategic importance of Alaska can be understood more readily by a look at the globe. The formerly impassable polar regions are now recognized as a broad thoroughfare to air travel and air warfare. The polar route brings Moscow to within about 3,500 nautical miles of Fairbanks, and to within 2,450 nautical miles of Chicago. Alaska is the guardian of the polar air routes (see Figure 1).

A mere 56 miles of water separates the Alaskan mainland from the mainland of Siberia. The two islands which lie in this narrow strait—Big Diomede belonging to the Soviet Union, and Little Diomede belonging to the United States—are less than 2 miles apart. With the nearest known Siberian air bases only 700 miles from Fairbanks, it can be seen that air control over Alaska and the Arctic means control over the shortest air routes by which Canada and our western and mid-

western cities could be bombed. Conversely, this control also gives us the capability to strike deep in the Soviet Union with long-range bombers.

Japan and the Soviet Union appreciated the military significance of the territory as early as 1922, when the United States was induced to include in the Naval Limitation Treaty of that year an agreement not to fortify the Aleutian Islands. The Japanese bombings of Dutch Harbor and their occupation of Attu and Kiska in 1942 were a rude awakening and should serve to remind us of the danger of attack from Asia.

Alaska is still relatively unknown, except by those few who have studied it or who have seen service there. In order to appreciate how vital Alaska is in the scheme of global strategy and how equally vital it will be in the future years of peace, it is necessary to know something of its geographical characteristics, and its resources and potential.

Physical Characteristics

This piece of real estate, purchased from Russia for slightly more than 7 million dollars, is a vast territory containing approximately 600,000 square miles. It is about one-fifth the size of the continental United States and about twice the size of Texas.

Militarily, it is not one area but a chain of areas, presenting tremendous problems of co-ordination, contact, and control. It is a land of few people and few roads. It

The future strength and strategic value of Alaska lies in its economic development. The greatest single barrier to this development is the present deficiency of adequate means of overland transportation

has the highest mountains on the North American Continent and coldest weather. However, contrary to popular belief, it is by no means a forbidding or inhospitable region.

The mainland lies roughly between the same parallels of latitude as Norway, Sweden, and Finland. Cape Prince of Wales—the most westerly part of the mainland—lies more than 400 miles west of Honolulu, while Attu—the most westerly of the Aleutian Islands—is almost due north of New Zealand and the Gilbert and Marshall Islands of the South Pacific. About one-third of the territory lies north of the Arctic Circle. The extremely long days in summer and the long nights in winter are important military considerations. For example, the weather forecast for 21 June 1952, as quoted in part from the Fairbanks *News-Miner* (America's most northern daily newspaper), was "temperature at noon today 71 degrees. Sunrise 12:58 a.m., sunset 10:48 p.m." However, in December the forecast might read: temperature at noon today 42 degrees below zero. Sunrise tomorrow 9:55 a.m., sunset 1:48 p.m.

Southeastern Alaska

The area nearest the United States is commonly called the "Panhandle." It comprises a long narrow strip of mainland bordering on Canada, with a great many islands and narrow water channels, inlets, and fjords, which form a part of the scenic "Inside Passage." This area contains

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the greater portion of the population who live in the major cities of Juneau, Ketchikan, Sitka, Skagway, and Petersburg (see Figure 2).

The entire area has a temperate climate but a heavy rainfall. Ketchikan, for instance, has an average annual precipitation of about 150 inches. The principle industries of the area include gold mining, fishing, and logging.

Arctic Region

The arctic slope lies at the other extreme end of Alaska. It is bordered on the north by the Arctic Ocean, and on the south by the Brooks Range, which rises to an elevation of 9,200 feet. Sloping toward the north is the tundra country, filled with thousands of lakes and swamps. Vegetation is sparse and is limited mainly to mosses, lichens, and small flowering plants. Because of the extremes of climate most of the ground (muskeg) is frozen. This condition is known as permafrost.

Point Barrow is the most important of the few settlements. Because of the ice pack along the arctic coast, vessels cannot reach Point Barrow until August so that contact with the outside the year around is limited to airplane. Eskimos live in small settlements close to the coast. There are trading posts and missionary stations at some of the larger native villages.

Of special interest is the Naval Petroleum Reserve established in 1923, some 200 miles north of the Arctic Circle, in the vicinity of Point Barrow. Along with oil exploration going on in other areas, its possibilities are considerable and its significance will be discussed later.

Bristol Bay Area

Alaskans generally consider the Bristol Bay area to be a separate and distinct part of the territory because of its individual characteristics and peculiarities. It can be defined roughly as that portion bordering

on Bristol Bay and the Bering Sea, to include the Kuskokwim River basin. Its low coastal region is a maze of small islands, shallow channels, lakes, and marshes which slope gradually toward the interior and the Kuskokwim Mountains. It marks the southern limit of the ice pack, however, the Bering Sea is generally frozen there until May.

This area, noted chiefly for its great

Attu, the westernmost of the Aleutian Islands.

Thousands of these islands, volcanic in origin, form this chain across the northern Pacific, ranging from unnamed rocks and reefs to the larger islands of Attu, Kiska, Adak, Atka, Umnak, Unalaska, and Unimak. There are only about four harbors in this entire chain which can accommodate large vessels. The extremely sparse

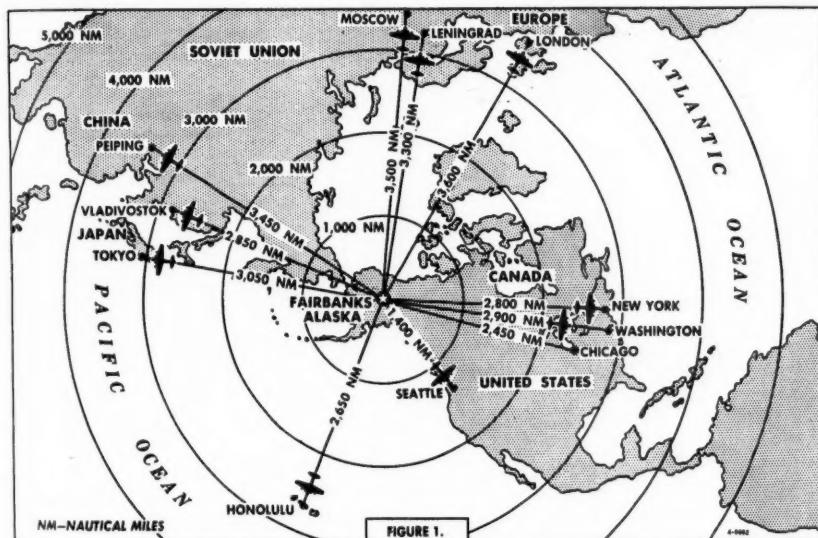


FIGURE 1.

fishing industry, has no roads or railroads.

Numerous native villages are found both along the coast and along the Kuskokwim River, both of which are accessible by small boats during the summer months and by plane the year around.

Aleutian Chain

The long appendage known as the Aleutian Islands extends to the west more than 1,000 miles from the tip of the Alaska peninsula to within a few hundred miles of Soviet territory. (See Figure 3). During World War II, it was reported that the Soviet Union established strong naval and air bases on Bering Island, 280 miles from

population consists chiefly of Aleuts, who manage somehow to eke a living from the crags and barren rocks and from the sea.

Continuous fog, heavy rains, and sudden and violent storms with winds of more than 100 miles an hour have earned these islands a reputation for bad weather. The term "Aleutian weather" is well known to the Alaskan fliers of World War II. Aside from their military value these islands offer little, especially in the field of commercial development.

The Pribilof Islands, although situated about 200 miles northwest of Dutch Harbor, are generally treated as a part of this island chain. These "Isles of Mist" are

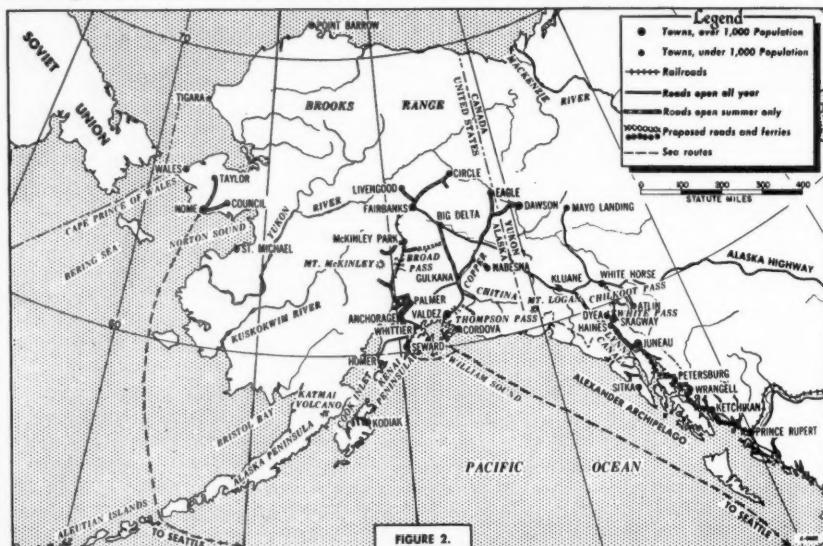
the center of the fur seal industry, a United States Government monopoly which grosses more than 3 million dollars a year. The author was a member of a force of less than 1,000 men who garrisoned these islands from September 1942 to September 1943, with the mission of preventing their occupation by the Japanese.

South Central Alaska

The area south of the Alaska Range surrounding Cook Inlet and bordering on the

mountain on the North American Continent. The wide, shallow Susitna River flows into Cook Inlet from the north, while the muddy heavily silted Copper River drains the eastern part of the area and flows into the Gulf of Alaska east of Cordova.

Bordering on Cook Inlet and jutting out into the Gulf of Alaska is the Kenai Peninsula, rugged, mountainous, and heavily timbered. The chief city is Seward which boasts an excellent harbor and is the southern terminus of the Alaska Railroad.



northern portion of the Gulf of Alaska is often referred to as the "banana belt." The hub of this region and the largest city in Alaska is the modern booming city of Anchorage, with a current estimated population of 55,000.

This region extends east to the St. Elias Mountains and inland to the summit of the Alaska Range. The eastern portion is a jumbled mountain mass with many glaciers both inland and near the Gulf of Alaska coast. The Alaska Range to the north includes famous Mount McKinley which towers to 20,300 feet and is the highest

Not far from Anchorage, near the head of Cook Inlet, is the much-publicized Matanuska Valley, which is the heart of the territory's finest agricultural region.

Generally speaking, the south central portion of Alaska has a temperate climate, summer temperatures commonly reaching 90 degrees, and rarely getting colder than 15 degrees below zero in the winter. Although this area holds the greatest promise of future development because of its climate, location, and transportation, its present economy is based largely on the presence of our armed forces.

Seward Peninsula

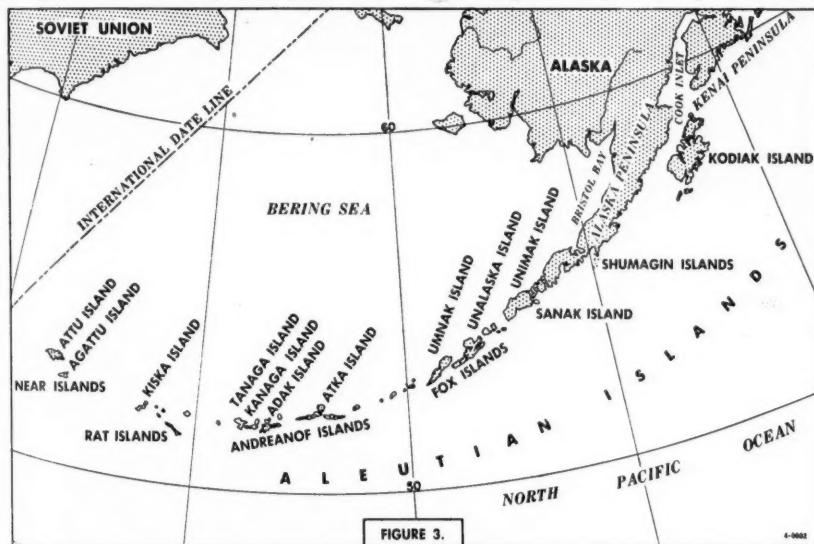
Reaching out like a spearhead to within 56 miles of the Siberian mainland lies the Seward Peninsula. Nome, famous from the Gold Rush days, is the largest town in the area. It was at Nome that the Soviet fliers landed while ferrying airplanes to fields in Siberia during World War II.

This region is bleak for most of the year. Rugged hills and low mountains are in abundance with some timber and much low growth of willows, elders, and other

insula on the west. This area is the great drainage basin of the Yukon River.

The Yukon—with its upper reaches in the Yukon territory of Canada near Skagway—flows in a huge arc across the entire territory of Alaska for some 2,000 miles. It is navigable for the greater part of its length, and has played a vital role in the history of the development of the territory.

Mining is the chief industry of the region. Large-scale hydraulic operations claw



shrubs. The surrounding waters of the Bering Sea are generally frozen from mid-October until May, when ships can bring in supplies to Nome and other coastal villages. Transportation is chiefly by air the year around.

Interior Alaska

The interior or "Golden heart of Alaska" is somewhat of a plateau lying between two great mountain barriers: the Brooks Range on the north and the Alaska Range on the south. It extends east to the Yukon border of Canada and to the Seward Pen-

gold from the frozen earth in the Fairbanks area. Fairbanks, largest and most important city of the interior, has been called the most typical of Alaskan cities. It is a queer mixture of the most modern with some of the most primitive. It is the northern terminus of the Alaska Railroad and an air center for the famed bush pilots on whom so many outlying communities depend for their very existence. The Alaska Highway, built in World War II, through Canada, and connecting Alaska with the United States, also terminates at Fairbanks.

Throughout the interior precipitation is light, the summers warm, sometimes reaching 90 degrees, and the winters are very cold, reaching 60 degrees below zero. There are forests of moderate-size trees throughout much of the area, but generally speaking, growth is scattered and sparse.

Resources and Industry

The present garrisoning of Alaska by the armed forces, with the attendant military construction program, has created a boom greater than the Gold Rush of 1898.

Until our modern decade, Alaska's economy rested none too securely on two industries—salmon and gold—and not much else. Both are largely dependent on migrant labor, are largely seasonal, and are absentee owned.

Other natural resources have been relatively untouched and undeveloped, yet rich mineral deposits are known to exist here. Coal deposits have been discovered in many parts of the territory, and are mined near Healy and also south of the Alaska Range, supplying much of the local need. Platinum, chromite, tungsten, antimony, and tin have been mined on a small scale. Large-scale copper mining operations were carried on for some years in the Kennicott area, but these have been worked out and operations have been abandoned. Silver and high-grade iron ore have been discovered.

Large quantities of oil are believed to lie beneath the frozen and unexplored wastes of the arctic slope. Appropriations in the form of the Navy Petroleum Reserve have permitted explorations and discoveries which may play a vital role in our strategic concept.

One of the most valued resources, if developed, is the millions of acres of commercial timber in the southern forests of the territory. It has been estimated that these could supply millions of tons of newsprint annually for an indefinite period.

Agriculture is capable of more imme-

diate development. Of an estimated 64 million acres of range and farm land about 10,000 acres are presently farmed.

Alaska cannot feed itself. Nearly all foodstuffs are shipped in from outside of the territory which materially increases the cost of living. Much is being done in an effort to improve the local market for farm produce. Many crops can and have been successfully raised: grains, potatoes, and most other garden vegetables, and some fruits. Livestock and poultry also can be raised.

Up to this point we have been largely concerned with the chief raw materials and the potential lying in that field. However, potential raw materials of themselves—raw materials in a vacuum—have little or no significance if there is no possibility of their utilization. Utilization implies first a need for the materials, a source of labor with the necessary skills to develop them, and a system of transportation adequate to take them to market.

The population of the territory is very sparse. Spacewise there are approximately 5,120 acres for each person in Alaska as compared with 15 acres for each person in the United States.

An accurate census is difficult because of the migrant population which comes in for seasonal work. Total current population exclusive of service personnel is estimated to be about 130,000. Of this number, approximately 35,000 are Eskimos, Indians, and Aleuts. In the past, most white men who have gone to Alaska have gone to make money, not to pioneer the territory. The growth of Anchorage and Fairbanks indicates a shift in the center of population with the tremendous growth of the inland cities.

The modern conveniences that go along with a high standard of living are no longer an innovation. Even the native Eskimo of the far north skirts the coasts and travels the rivers in boats powered with outboard motors.



Normal military operations in arctic areas are more difficult to perform and require a longer time to complete as compared to operations in temperate climates. Above, infantrymen, in arctic dress, advancing during a training exercise in Alaska. Below, armor personnel testing tanks on the rugged terrain of Alaska.—Department of Defense photos.



Transportation

Along with the sparsity of permanent settlers, the lack of adequate overland communication facilities has been one of the chief deterrents to the development of the territory.

There is only one railroad serving this huge expanse of terrain: the Government-owned Alaska Railroad, running for about 471 miles from Seward in the south to

The building of the Alaska Highway, completed in 1942, brought into view a new era in the development of Alaska. Built to serve a military necessity, it is becoming an artery carrying hundreds of travelers and thousands of tons of freight the year around.

A fine new modern highway now connects Anchorage with Seward. Other highways are planned or are being built, nota-



There are about 3,000 miles of highway and side roads in the Alaskan territory. Above, one of the few improved highways which penetrates Alaska's bleak and desolate interior.

Fairbanks in the north. A 20-mile branch line, the White Horse-Yukon Railroad, links Skagway to White Horse.

There are in all about 3,000 miles of highway and side roads covering the territory. Prior to the completion of the Alaska Highway, the highway system consisted of the Richardson Highway, about 372 miles long running from Valdez to Fairbanks, the Glenn Highway connecting Anchorage to the Richardson Highway, and the Steese Highway extending north from Fairbanks for a distance of 165 miles to the town of Circle.

bly one to Mount McKinley National Park. In addition to these highways, there are a few short roads around the various smaller settlements.

For many years the Yukon River, which is navigable for about 4½ months of the year, had been the principal inland waterway. This opened up many of the small interior settlements, but at best this travel was slow and limited to the summer months.

It should be quite apparent that Alaska suffers from excessive space. It is quite natural that the airplane should come to

be the one factor to overcome this space barrier and tie together these vast expanses. From the bush pilots to the scheduled airline, the airplane has done, and is doing, more than anything else to reduce the isolation of the territory and its widely separated communities, and to make possible the development of many untouched areas. Many natives of the remote interior who have never seen a railroad train or

the services plays a vital role in this unified command.

Great distances, rugged terrain, and the difficulties of transportation and communication make airborne and amphibious operations the greatest offensive threat to Alaska. Lieutenant General W. E. Kepner, Commander in Chief, Alaska, has stated, "An enemy's most effective weapon must be airborne. His route will logically be over



The total current population of Alaska is estimated to be about 130,000. Approximately 35,000 are Eskimos, Indians, and Aleuts. Above, a typical Alaskan native and his home. ridden in an automobile have flown in airplanes. Many small air strips are scattered over the entire territory and a chain of larger airports is located to support the commercial air transport operations in all seasons of the year.

Military Aspects

The defense of Alaska is based primarily on air transportation, and our military effort has been concentrated chiefly on air bases. It has been designated as an air theater and is under the command of an Air Force general. However, each of

the North Pole." It is on this concept that our defense is predicated, since our airfields in the hands of an enemy would bring most of the continental United States within the range of enemy bombers.

Objectives of military importance are widely separated and consist of airfields, seaports, communication centers, and lines of communication. Rapid deployment of our own ground troops for defense will be accomplished through the use of air transportation. Such airborne forces could be employed to (1) reinforce threatened areas and installations, (2) seize critical terrain

in order to deny its use to the enemy or to facilitate operations by other forces, or (3) drop within an enemy lodgement area, cut off its support, and subsequently eliminate the lodgement.

It is unlikely that large-scale overland combat operations would be undertaken. Such combat operations will be conducted within short distances of fixed installations, with short supply lines in both summer and winter. Operations of lesser magnitude and away from roads can readily be supplied by air drop. Large-scale movements cross-country (away from roads) are a virtual impossibility in either summer or winter. Units larger than regimental combat team size will rarely be employed. Movement for any distance must be by highway or by air.

Arctic Training

Training for arctic operations presents a few problems which normally are not encountered in training for operations in temperate climates. The chief difference lies in the fact that, because of the terrain and climate, normal military operations are more difficult to perform and require a longer time to complete.

Trained troops can operate effectively for extended periods in the field in extreme cold.* Cold weather operations require extremely detailed prior planning and the use of common sense, resourcefulness, perseverance, and strong leadership in all echelons of command. Indoctrination in survival techniques and teaching the individual how to live and take care of himself in extreme cold will help to overcome the fear of cold. Training must include the use, maintenance, and care of

* The author took part in a 10-day field problem during which the temperature ranged from 40 to 60 degrees below zero. There were only five minor frost-bite cases in the entire battalion combat team.—The Editor.

standard as well as special equipment in extreme cold. All personnel must understand thoroughly the limitations imposed by the terrain and temperature upon both men and equipment.

Conclusions

1. The future strength and strategic value of Alaska lies in its economic development. The greatest present handicap to this development is the lack of adequate overland transportation.

2. Fundamentally, the wealth of the United States has proved the greatest barrier to the development of Alaska and this situation is likely to remain as long as resources are more abundant or more accessible within our continental borders.

3. No conceivable concentration of troops could adequately protect Alaska. Our defense must rest on islands of resistance built around our air bases, communication centers, and other vital points. We must be capable of reinforcing these points with airborne or air-transported troops within a very short time. Our air bases, together with an early warning screen, must serve to ward off any airborne threats and serve as springboards for offensive strategic air operations.

4. Tactical aircraft, including troop carrier and cargo aircraft, will fulfill a vital role in defensive as well as offensive operations. Aerial delivery will be the normal resupply means for isolated units and outposts.

5. It is essential that officers be trained in arctic and cold weather operations and techniques.

6. Alaska will always be a major military outpost on our northern frontier, and is destined to play an increasingly vital role in our global strategy of the future.

TEST PILOT SCHOOL

THE United States Air Force Flight Test Pilot School, located at the Air Force Test Center, Edwards Air Force Base, California, is designed to maintain the Air Force's capability for experimental flight testing at the high level of proficiency required for the successful development of new Air Force aircraft.

The Air Force's beginning student is a skilled pilot and when he graduates from the school he is fully prepared to be a skilled test pilot in aircraft types ranging from helicopters and small liaison planes to heavy jet bombers.

The entrance requirements are high for the pilots entering the school. An applicant is normally required to have the equivalent of 2 years of college in engineering. He must have a minimum of 1,500 hours of diversified flying time, and can be of any rank from second lieutenant to major.

The subjects taught at the school point up the necessity for an engineering background; they are, to name a few, applied mechanics, performance aerodynamics, calculus, thermodynamics, supersonic aerodynamics, weight and balance, jet engine performance (theoretical and practical), and the preparation of technical reports.

The classroom work of the school is balanced by approximately 30 to 35 hours of performance evaluation in the school's training aircraft, the T-28 and F-80, and 35 to 40 hours completing stability problems in the B-25.

During all flights, with the exception of

those in the single-place F-80, an instructor from the school accompanies the pilot. The flight plan normally indicates a series of maneuvers that the student must perform under the supervision of the instructor. Typical flights might feature long hours at extremely high altitudes, steep rate-of-climb take-offs, nose-up attitude landings, vertical stalls, spins, performance take-offs, and minimum distance landings.

Most of the morning schedule is spent on various types of flights, or in studying the film that was taken of the instruments on the flights the day before. A motion picture camera is located behind the pilot and records the aircraft's instrument readings while he performs his maneuvers. The afternoon schedule consists of lectures on the engineering aspects of aerodynamics.

Almost endless examples could be given of the types of aircraft tested by the school's graduates. Prominent among the list, however, are such research planes as the rocket-propelled S-1, the tailless S-4, the adjustable-winged S-5, and the delta-winged XF-92A. Other aircraft include the XB-51, XB-60, YB-52, B-47, F-86, F-84, F-84F, F-94, and F-94C, as well as many more.

Many graduates of the United States Air Force Test Pilot School have contributed to the advancement of aviation. Many more will follow in their footsteps, establishing outstanding records in the field of aviation and rendering great service to the Air Force and the nation.

The Air Force Test Pilot School is designed to maintain the Air Force's capability for experimental flight testing at the high level of proficiency required for the successful development of new aircraft

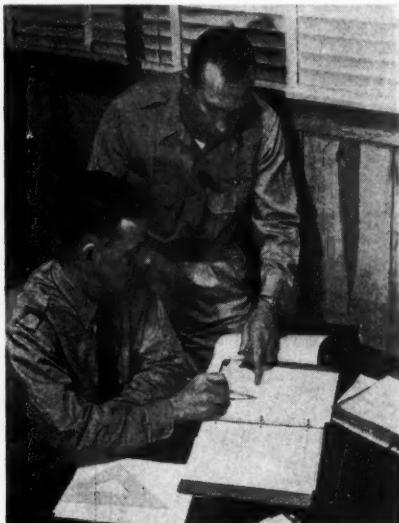
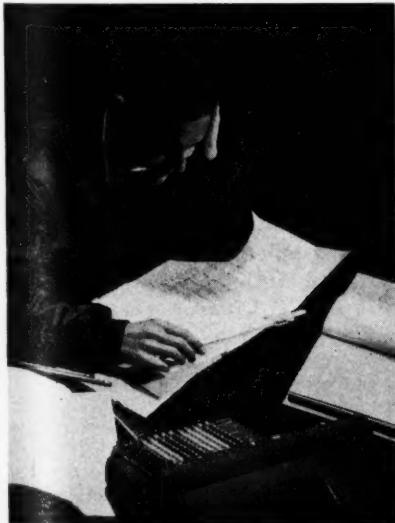


The Test Pilot School at Edwards Air Force Base is the only one of its type in the Air Force for the training of pilots for such a highly important job as test pilot. Above, a student test pilot climbing aboard an F-80 for an assigned test flight. Below, student pilots discussing a map of the local flying area.—Department of Defense photos.





Entrance requirements to the Test Pilot School are high. The subjects taught range from theoretical aerodynamics to report writing. Above, students learning about a maneuver to be performed. Below left, a student compiling test flight data. Below right, an instructor going over the notes of a Canadian student.—Department of Defense photos.





The test pilots' day consists of flights, studying a film showing instrument readings of the previous day's flights, and lectures on the engineering aspects of aerodynamics. Above, an instructor teaching students film reading methods. Below, a class of test pilots learning about aircraft stability and control.—Department of Defense photos.





A graduate of the Test Pilot School is fully prepared to become a skilled test pilot for all the various types of aircraft produced. Above, two test pilots preparing to test the English Electric *Canberra*. Below left, the *XF-92A*, and below right, the *F-94C*, two types of aircraft tested by Air Force test pilots.—Department of Defense photos.



THE PLATINUM RULE

A Concept of Persuasive Leadership

Lieutenant Colonel Robert P. Haffa, *Signal Corps*
Student, Command and General Staff College

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

GENERAL Omar N. Bradley, in a recent article on leadership, started by saying, "The greatest soldier in the world could never win a campaign unless he had the kind of leadership in his make-up which best suited the men he had to lead," and ended with, "Perhaps most important is loyalty. On this factor alone battles are won or lost. To be really effective, loyalty must go three ways—up, down, and sideways."

Loyalty

Most of us understand the loyalty up, which includes doing what we know a superior would want us to do. Many of us understand the loyalty sideways, which is voluntary co-operation with our associates—teamwork. However, the loyalty down—the essence of persuasive leadership—is a little harder for most of us. Loyalty down requires the capacity to identify with others, to place ourselves in the other man's shoes, and we have had less practice doing that with subordinates.

Tact is considered by many as a trait helpful in persuasive leadership. Some brilliant men, however, are the most tactless persons imaginable. Some people set such store on frankness, honesty, and forcefulness—all good traits—that they

disregard the feelings of others. Some people are so intensely egotistical and selfish that they cannot project themselves into the other person's situation.

As Dr. George W. Crane points out in his syndicated column *Worry Clinic*:

Even young children can sometimes be reasonably tactful if they are eager to be included on a ball team and hence are sensitive to the wishes of their playmates. Thus, some people educate themselves at an early age, whereas other blunt, bulldozing types never do acquire much tact.

A great deal of our success may be due to loyalty sideways, the teamwork so characteristic of most Americans; however, maximum human results can be attained only by giving the soldier the persuasive leadership he deserves. This also can be acquired; it is doubtful that there are any *born* persuasive leaders.

Many leaders and writers have touched upon the *plus or unknown X* factor in leadership. Many have recognized that a leader must be more than a technician. General J. Lawton Collins has talked about the "human touch," but has failed to define it. Although a great deal has been written about leadership, our knowledge is inexact and little of it has been proved. Although basic research is going forward in many institutions, science may not find the answer. Perhaps Robert Frost was right in his optimistic feeling that the present will make its point in history by finding that, "the better half of the world, of our daily life, can't be made a science of."

At the present, much of the literature on leadership is questioned since it is

based on an analysis of successful leaders. That concept is considered "impressionistic" because there is: (1) no reliable evidence of traits common to all leaders, (2) no evidence of what traits aid attaining or maintaining leadership, (3) no indication of whether traits are developed after or prior to leadership, (4) no proof that personality is a sum of traits, (5) no proof that the same traits are helpful in different situations, and (6) no separation between persuasive leadership and authoritarian power or paternalism.

Two correlated ideas seem to be in favor at the present:

1. That the leadership required varies with the situation.

2. That to be a persuasive leader an individual must satisfy the needs of his followers.

Napoleon said, "The morale is to the physical as three to one." We all know the importance of morale and *esprit de corps*, but a simple, easily remembered rule may make it easier to apply the principles of persuasive leadership.

The Platinum Rule

The Golden Rule may have suffered somewhere in its translation, but aside from that, it does not go quite far enough. It centers too much attention on *you* and not enough on the others and their feelings. It does not indicate clearly the required capacity to identify with others.

Loyalty is an important factor in leadership—loyalty up, sideways, and down. Loyalty down is the essence of the Platinum Rule of persuasive leadership, 'Do unto others as they would have you do unto them'

Going one step further, I have called a variation, "Do unto others as *they* would have you do unto *them*," the Platinum Rule.

This may be the catalyst required to integrate the efforts of individuals to a common effort. It appears to fit the re-

quirements of being adaptable to different situations and providing persuasive leadership from the follower's standpoint. Most rules require analysis, explanation, and demonstration for proper application. Let us examine the rule and its possible application to persuasive leadership in several situations.

It has been indicated previously, in discussing loyalty and tact, that the difference between leaders and followers is one of degree, and that it is more difficult to be a leader.

Leadership

Leadership, in a sense, is a role which an individual occupies at a given time in a given group. That same individual may be a follower in a different group at the same time. Leadership may be defined as "the art of influencing others to co-operate in achieving a common goal." If the group member sees satisfaction of needs in the direction the leader indicates, the group member follows—that is persuasive leadership.

On the other hand, the leader may say, "Follow me or else"—that is authoritative leadership. As is indicated in General Bradley's article and in Army doctrine, persuasive leadership must be used to obtain the whole-hearted co-operation necessary for success and is the American democratic way.

The application of the Platinum Rule

is encouraging for those who despair of ever attaining all of the superlative traits of personality, character, appearance, knowledge, and others which are enumerated in the many books on leadership from the impressionistic approach. The leader will be followed continually if

he gets his followers more nearly what they need than anyone else. "If he does so, he will be followed by he small, insignificant looking, and relatively speechless," states Irving Knickerbocker.

Is it possible for a military leader to satisfy his soldiers' needs in the Army and thus be a persuasive leader? Admittedly, it is not easy, but it is possible—it has been done by many real leaders, including General Bradley. It is the only way to obtain the human effort required for success with Americans.

Motivation is not particularly difficult. The soldier, at every level, can be inspired by the high ideals of "Duty, Honor, Country." He is helping protect his country, his way of life, and his loved ones. He can receive the same satisfactions he would receive from working on a project for his family if his efforts receive the proper appreciation.

Other Methods

Let us examine four methods used to direct people in more detail: (1) force, (2) bargaining, (3) paternalism, and (4) satisfying mutual needs through the application of the Platinum Rule. The military leader does not have much choice among these methods.

Force involves the negative aspects of authoritarian leadership such as fear and, therefore, does not obtain full cooperation.

Collective bargaining has arisen in the business field as a means of obtaining

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co-operation in accordance with a contractual agreement. This method satisfies the human needs of the individual through a leadership separate from the business management. This system probably arose because of the failure of both authoritarian and paternalistic methods to satisfy the needs of employees. However, this method cannot be considered seriously as it is not permitted in the military services.

Paternalism is characterized by the giving of a wide variety of material benefits to employees in the hope that they will gratefully respond with devotion. It is a materialistic philosophy which appeals to such weaknesses in man as greed and laziness. It results in a something-for-nothing attitude, violates the psychological rule of cause and effect, and fails to satisfy such human needs as personal dignity and personal accomplishment.

This leaves us with only the Platinum Rule and a caution to apply it in a positive manner, appealing to such strengths in man as courage, honor, industriousness, and self-respect.

Positive Needs

Studies reveal that these positive aspects are most satisfying and that they are what most men search for and hope their leaders can provide. Men need a sense of belonging and participating in a common effort. The mission of the leader will be accomplished better through persuasive leadership. Leadership can be a truly creative force within an organization when it deliberately strives to capitalize upon the understanding, the initiative, and the good will of those being led. So much, then, for a brief analysis of the means employed to direct human effort which distinguishes persuasive leadership from other methods.

The Individual

It is at the grass-roots level of the individual that the social scientist's analysis can best be tested and where values can be

found or found wanting. The individual is our most important asset. It is difficult to integrate the individual without considering his own needs, sentiments, and background. Of the democratic values violated by authoritarian leaders, perhaps none is more central than the Kantian principle that every man should be treated as an "end"—he is not to be used as a tool or as a means to someone else's "ends." It is only through knowledge of his men that the leader can determine their needs and integrate their efforts. People are more moved by appeals to their feelings than to their rational being.

Qualitative Factors

Not only does the source of sound personnel administration reside in the conscience of leaders, but it is concerned with the spirit and hearts of people. Those are qualitative factors. History offers no evidence that quantitative methods and rewards have ever provided the solution to qualitative problems.

Rational Means

One difficulty which must be overcome is our tendency to consider only rational means. Social feelings are often nonrational, yet they have a greater appeal to human beings than logic. For example, the man who puts on a hat for shade is acting rationally; when he removes it because a lady enters an elevator, he is acting nonrationally and for a social reason. However, if he should take off his hat and throw it on the ground for no reason at all, he would be acting irrationally.

Point of View

Many officers consider the military salute as an outward indication of good discipline, obedience, training, and morale. In the same way, many people believe that removing the hat indicates courtesy, good-breeding, and is the mark of a gentleman.

Logical explanations of the background of hat removal or saluting may have little value. The same soldier who salutes smartly on an Army post where the social significance of his act is appreciated may resent saluting while in town with a friend, because in town such an act may be misunderstood as acknowledging subservience.

Until the civilian populace accepts the social aspects of military life, a leader may be able to accomplish certain ends in military communities by persuasive methods while the same results in civilian communities might be resented as being authoritarian.

It is probable that our country will never again have a small, relatively professional Army where all noncommissioned officers have had many years of service, but, instead, will be dependent upon a larger force composed primarily of citizen soldiers called to serve for short periods. The social attitudes and needs of these men will be largely influenced by their civilian backgrounds and the military leader must keep abreast of social changes to understand and integrate fully the behavior of the civilian soldier.

Application

The Platinum Rule may be applied to the simplest problems as well as the most complex ones. If applied to most decisions, the leadership "human touch" may be added where least expected. For example, one person may want a window open because it is hot while another may want it closed because of a draft. Opening a window in an adjacent room or hall may satisfy both of them.

Another example is that of operating a centrally located supply installation so situated that the two units approach from opposite directions. Establishment of priorities will satisfy only one unit, to form only one line will not satisfy the unit which is required to go farther; how-

ever, rearranging the installation so that the units can be serviced from both sides in the order in which they arrive should satisfy both.

The Platinum Rule should overcome a tendency to follow another "copy-cat" variation of the Golden Rule, "Do unto others as they have done unto you." It is surprising how many men have taken a "hazing" from their superiors and resented it only to turn right around and "haze" their subordinates. People are human, and our superiors do have their faults. By following the Platinum Rule we can be loyal to superiors without copying their faults.

Adaptability

Another advantage of the Platinum Rule is that it is adaptable to the many situations which the military leader encounters. The commander may have greater knowledge of military strategy, tactics, and technique than any of his subordinates. However, he will be assigned to many positions and confronted with many situations where this knowledge will not suffice. The Platinum Rule provides a method of solving the human problems which will be encountered in all situations where persuasive leadership is desirable.

The Commander

Since leaders are appointed in the military services, persuasive leadership should be considered a duty which will preclude abuse of authority. The change from authoritarian to persuasive leadership depends almost exclusively upon the skill with which the commander transforms himself into the persuasive leader. All the pressures of convention and all the lines of least resistance move him toward the continued use of formal authority. He must *want* to be a leader if he is to succeed, because the role of the leader is harder than any other.

The commander can assist in the application of persuasive leadership techniques

throughout his organization. He should explain the concept of persuasive leadership to his subordinate commanders and staff and explain that morale is considered to be of primary importance. He should announce that disagreements between subordinate groups and any with outside groups be brought to his attention and encourage subordinates to make complaints first to immediate superiors, yet make it clear that he is available at all times to the personnel of his command.

Handling Complaints

When complaints are made, the commander should listen patiently, be interested, and try to understand why the subordinate feels as he does. He should not pay exclusive attention to the manifest content of the conversation or become so interested in disproving the truth of rationalized sentiments that he misses the point that these are sentiments and not facts. (Sentiments are often oversimplifications such as: everything not perfectly safe is dangerous; everything not perfectly good is bad; everything not perfectly efficient is inefficient.) It is the situation and not the words that the leader needs to understand. When the values and significances of the situation to the follower are determined, the leader can apply the Platinum Rule.

Aids to Understanding

Some reading in the humanities—especially psychology, sociology, and anthropology—may help the technically trained leader in his understanding of human behavior, customs, and sentiments. Much of a practical nature has been written recently in the fields of business and public administration. However, most medical schools do not require a single course in psychology although conservative medical educators admit that about 50 percent of all modern medical practice is psychological. It is also possible to be a persuas-

sive leader without such formal study. It may not be a surprising idea to find that "the fine man to work for, the man you would do anything for," practices the Platinum Rule.

Testing for Leadership

The best way to test for leadership is to measure it against the performance of our group. Leadership is indicated by confidence, initiative, and the interest of subordinates in their work. Within the group, teamwork, understanding, mutual respect, and friendliness between superiors and subordinates will be noted. The efficiency of the group will increase or remain high even when outside influences such as weather and physical facilities would normally tend to decrease performance.

The warmth created by persuasive leadership will be evidenced by an atmosphere that is cordial and congenial.

Conclusions

A brief analysis has been presented to distinguish persuasive leadership from other methods. As General Bradley stated:

Loyalty on the part of the leader, to the men whom he leads, is the only adequate repayment for their loyalty. This means an understanding ear for their needs and complaints, an honest answer to their questions, and a convincing and courageous presentation of their just needs to higher authority.

If the Platinum Rule helps the man who wants to be a persuasive leader, it will have served its purpose. If whole-hearted co-operation can be achieved, who knows what human effort may attain?

NEXT MONTH

The next issue of the **MILITARY REVIEW** will feature the article "Indochina: The Seven-Year Dilemma" by Mr. Bernard B. Fall, a French citizen and reserve officer in the French Army. Mr. Fall prepared his material in Indochina where he is presently preparing his thesis on the Vietnamese National Government for his doctorate in Political Science. He points out that after seven years of war between the French Union Forces and the Communist Vietminh troops in Indochina, the present situation indicates a stalemate there similar to the one which has existed in Korea.

"An Unsolved Problem," from *The Army Quarterly* (Great Britain), will be included in the "Foreign Military Digests" section of the magazine. This article details what could have happened on the plains of Waterloo when Napoleon had the fate of Europe in his hands only to lose it when sufficient reserves were not available. During the period when Napoleon desperately needed reserves, the entire French I Corps marched back and forth between the battle fronts at Ligny and Quatre Bras without ever being committed.

MILITARY GOVERNMENT LOGISTICS

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE baking of bread, production of socks, movement of people, running dynamos, and the management of factories—all apparently dissimilar things—are included in military government logistics, because they are a part of the logistical thinking.

There is no contention that military government logistics is different from logistics proper. Rather, it may be said that it is the civil branch of logistics.

During the early days of World War II, the outlines for a theory of military government logistics were suggested.

North Africa

When United States troops invaded North Africa in November 1942, a working agreement with the French forces relieved us somewhat of administering the civil affairs of areas liberated by our troops. However, in the other aspect of military government, namely in the logistical field, we found that some program was needed. At first, we attempted to implement that program through a civil agency of the Executive Branch of our Government. Consequently, the North African Economic Board (NAEB) was activated by our Department of State.

Although it was recognized that initially the requirements of military operations would be paramount, NAEB was divided into two departments, civil and military. NAEB served primarily as a means of co-

ordinating civilian requirements with the supply and transport requirements of military operations.

A long-range program was implemented which included the following activities: supply of materials essential to the civilian population and to vital utilities and industries; purchase of strategic materials; handling of currency and financial problems; maintenance, repair, and expansion of transport facilities; maintenance of public health; expansion of the production of foodstuffs and other commodities needed by the civilian population and allied forces.

As a result of our experience in North Africa, it was decided that a military rather than a civilian agency was the proper agency to have primacy in implementing such a program.

Finally, on 13 November 1943, President Roosevelt stated that henceforth the Army would have to assume the initial burden of the shipment and distribution of relief supplies in territory liberated and occupied by our military forces thus ending the civil-military conflict as to the priority of authority in civil affairs during military operations.

The President's decision greatly expanded the basis of military government logistics, which was to be expanded still further in Europe and in the Pacific.

Logistics Defined

Before proceeding further, it would be well to define logistics and to show wherein military government logistics differs from the normal definition. According to SR 320-5-1, *Dictionary of United States Army Terms*, logistics is defined as "that part of the entire military activity which deals with production, procurement, storage,

transportation, distribution, maintenance, and evacuation of personnel, supplies, and equipment; with induction, classification, assignment, welfare, and separation of personnel; and with facilities required for the support of the military establishment including construction and operation thereof. It comprises both planning and implementation."

In a more limited sense, logistics is also regarded as that branch of administration which embraces the management and provision of supply, evacuation and hospitalization, transportation, and service.

Logistics, in this latter sense, comprises getting the right people and the appropriate supplies to the right place at the right time and in the proper condition.

Military Government Logistics

Military government logistics, on the other hand, encompasses the total economy and resources of the occupied area—its matériel, personnel, facilities, and services—and considers the ability of that economy to contribute to the military effort of the occupying forces, as well as the military's ability to support that economy.

Military government logistics has both military and civil aspects.

It comprises all the functions of the occupied area, such as the economic, transportation, communications, utilities, medical, displaced and destitute persons, labor,

construction measures for the accomplishment of the civil mission of the occupying power. This civil mission is determined by national policy or international agreement, law, and custom.

War and Peace

It has been traditional in the past that war is a contention between states through their armed forces whereby each force attempts to overpower the other. However, future wars may very well be directed by an enemy against the citizens of a nation as well as against the nation's armies. The inhabitants of a city or an area, and all civilian facilities, would then play a strategic role.

In any event, modern warfare requires that all available resources be used to further the military effort. People, their economic wherewithal and institutions, provide potential sources of assistance or hindrance to the military commander.

The commander must control the civilian population within his area of operations in order to accomplish his military mission. He must also utilize the resources of the area to the best advantage for his mission.

All military personnel must realize that there will be a period, after the period of destruction, when civilian resources and population can be effectively used to meet the objectives for which we are fighting.

The military government mission is that of furthering national policies and assisting the commander in fulfilling his obligations to the civilian population imposed upon him by international law and customs of war

and service functions. It comprises those functions that influence the military effort or may be induced to support the military mission of the occupying power.

It also comprises those functions that may be supported by the occupying forces, such as relief, rehabilitation, and recon-

struction measures for the accomplishment of the civil mission of the occupying power. This civil mission is determined by national policy or international agreement, law, and custom.

However, we must win the peace, as well as the war. Hence, there should not be wanton destruction or exploitation of the peoples and of the area.

War is a duality: destruction and reconstruction. War plans must contemplate both facets of modern warfare.

Strategic Planning

The commander, while focusing his attention on the objectives of his campaign, must anticipate the effects of his planned operations. In strategic planning, he selects as targets decisive objectives which will reduce the enemy's will to fight and the enemy's logistical potential; the aim being to induce the enemy either to withdraw or to sue for peace.

Target objectives may include vital industrial, commercial, and communication centers; sources of raw materials and food-stuffs; lines of communication and supply within the nation; and seats of governmental control and administration.

The commander must take into consideration all target objectives with the view in mind that some objectives may not be essential to the military mission and would have a damaging influence on the civilian economy. He must avoid increasing the burden of later military government logistical support of his civil mission to relieve and revive the economic well-being of the objective area.

In support of the military mission, the military government service organization assumes supervision of the civil economy as soon as the area is uncovered.

Local resources will be mobilized so as to benefit most efficiently the tactical mission and the achievement of military objectives. Moreover, the civilian population will be assisted to resume normal production and movement of goods at the earliest possible date.

Captain Ned A. Holsten served as a Quartermaster staff officer in 10th Port headquarters in North Africa and Sicily during World War II. From 1944 to 1947, he served with the Allied Commission in Italy as a staff officer in the field of economics. After the war, he attended the University of California at Berkeley, and received his Master of Arts degree from that school. He is presently serving as an instructor of Military Government History at the Provost Marshal General's School, Camp Gordon, Georgia.

This return to a normal civilian economy as rapidly as possible is required in order, *first*, to fill the needs of our military forces, and, *second*, to enable the area to once again become self-sufficient and thus not be a drain on other resources.

Therefore, local resources must be protected to the maximum extent possible so that the civilian population may transport and equitably distribute food, medical supplies, and clothing.

All military personnel must be instructed that requisitions from the civilian economy must be "cleared" through the military government service organization. They must be instructed to keep out of civilian hospitals, factories, food warehouses, and similar institutions unless their presence there is absolutely necessary.

Commander's Staff

The entire staff of the commander has an interest in military government logistics, and it is necessary for all the various general and special staffs to co-ordinate their plans and actions in order that they will arrive at sound decisions.

Technical assistance which is needed or deemed advisable from military sources to accelerate the economic revival of the liberated or occupied area should be furnished.

Supplies and special equipment needed, which are not otherwise available, should be allocated from military stocks.

Two Aspects

As has been stated, military government logistics has two aspects—the military and the civil.

On the one hand, military government logistics involves the logistical support of military operations through the utilization of civilian supplies, facilities, and services. On the other hand, military government logistics involves logistical support of the civil economy through the utilization of military supplies, facilities, and technical services.

Logistical planning, then, must contemplate supporting the civil as well as the military operations for which the commander is responsible.

Since this is a command responsibility, all technical services are responsible for their respective parts.

Technical Services

The technical services may contribute in many ways to, or participate in, the civil aspect of military government logistics. For example, there is the requisitioning, transporting, receiving, storing, and issuing of imported military government civilian supplies.

Also, when authorized, there is the movement, housing, feeding, clothing, and medical care required in mass evacuation of communities.

In addition, there is the clearance of debris, rehabilitation of water, sewerage, and allied utilities, as well as removal of damaged structures and of mines and booby traps which are considered hazardous to the civilian population.

Provision must also be made for the health of the civilian population and for sanitary conditions including emergency medical care for civilian casualties, procurement of drugs and vaccines, and allocation of civilian hospitals or other facilities for military and civilian use.

It is basic logistical doctrine that existing facilities in the area of military operations will be utilized to the maximum. This reduces the construction effort and thereby reduces the requirements for engineer personnel and Class IV engineer supplies.

The potential of the services of the Quartermaster Corps also is increased through the use of existing refrigeration, bath, laundry, bakery, shoe, clothing, and metal repair facilities.

The potential of the Transportation Corps is augmented through the use of existing rail, water, and road nets, just

as the potential of the Signal Corps is improved by the use of existing communication facilities.

In the logistical build-up planning prior to large-scale military operations, consideration should be given to projects for rehabilitation and reconstruction of civilian facilities for military use in the objective area. These include ports, railroads, highways, hospitals, personnel accommodations, depots, shops, special plants, and radio and tele-communications facilities.

It can be anticipated that such facilities will be returned to civilian use as soon as the logistical need of the military operation has passed.

In planning for the rehabilitation, reconstruction, and use of existing civilian facilities, consideration should always be given to their common military and civilian use. Particular attention should be given to ensure that adequate priorities and allocation of their use reflect consideration of the civil as well as the military mission of the commander.

Every effort should be made to increase the number and scope of such dual-purpose projects. This expedient will speed up the accomplishment of the military government logistical mission of the commander in its civil as well as its military aspects.

Large numbers of civilians without shelter, food, fuel, and medical care, or the means of obtaining these and other bare essentials of life, can become a grave danger to the security of our military operations, to our lines of communication and supply, and to the very health and safety of our troops.

Military necessity dictates that provision be made for handling such civilians.

International Law

The responsibility for the well-being of the civil populations, within territories occupied or liberated by military forces, has been recognized by international law and custom for a long time.

As recently as 12 August 1949, this responsibility was given international sanction by Article 55 of the Geneva convention, which states:

1. To the fullest extent of the means available to it, the occupying power has the duty of ensuring the food and medical supplies of the population; it should, in particular, bring in the necessary foodstuffs, medical stores, and other articles if the resources of the occupied territory are inadequate.

2. The occupying power may not requisition food-stuffs, articles of medical supplies available in the occupied territory, except for use by the occupation forces and administration personnel, and then only if requirements of civilian population have been taken into account. Subject to the provisions of other international conventions, the occupying power shall make arrangements to ensure that fair value is paid for any requisitioned goods.

During hostilities, plans must provide for the discharge of our responsibilities to the inhabitants of areas liberated or occupied by our forces.

In order to achieve our national objectives, however, these responsibilities may extend into the post-hostilities period. Without regard to the legal viewpoint, our ultimate national objective will be the earliest withdrawal of our military forces which is consistent with leaving behind a peaceful, economically stable nation with a representative form of government.

It has been our national policy, also, to participate in programs for the rehabilitation and reconstruction of disaster areas, including those areas which have been ravaged by war. Such programs involve substantial civil economic aid of broad scope and it can be anticipated that they will be initiated as soon after the uncovering of an area as tactical operations will permit.

Army Responsibility

The provision of civil economic aid is an Army responsibility in areas of military operations where it furnishes the major logistical support.

It is the commander in the field who

must control the supply pipe line, set priorities, and be able to get to the right place at the right time regardless of what is needed to support his operations—ammunition for troops or food for civilians.

The commander should make maximum use of local resources but, where they are inadequate, he must supplement them from military stocks. The military supplies which he furnishes ought to be only that which is absolutely essential to meet the urgent needs of the occupied territory during the period required for the exploitation of military operations.

It may be arbitrarily stated that during the period of active military operations, the responsibility for supplying the inhabitants cannot be separated from the responsibility for supplying the military.

This unilateral responsibility is further justified by the necessity for integrity of command, the initial inseparability of relief and of rehabilitation functions, as well as the instances of common civilian and military supply needs, resources, and facilities.

The commander, in addition, must control or effectively influence economic decisions to assure the effectiveness of the economic aid programs which are in support of the economy of the area occupied by his troops.

Consequently, where the indigenous government retains sovereignty, civil affairs agreements are required in regard to the administration of economic aid programs.

While the Army has primary responsibility, there must be effective integration of the many United States civil agencies that participate in implementing our national policy.

On the other hand, the commander should be relieved of the area when it is no longer important to his mission or justified by military necessity. This especially is true when there is a civil agency which is capable of performing these functions without

conflicting with or jeopardizing military interests.

The cut-off date for Army responsibility and the shift of that responsibility to a civil agency, national or international in character, is influenced by:

1. The cessation of hostilities and the achievement of relative stability in the occupied or liberated territory.
2. The axiom that it is far less costly to rebuild indigenous resources and productive capacity than it is to continue direct relief.

Also, the political and economic considerations involved in rehabilitation make it desirable that civilian rather than military agencies be given the primary responsibility.

Delay in the transfer of responsibility to a civil agency may be necessary until there is a transfer also of supply priorities from the military to the civil agency.

Because of the Army's know-how and supply machinery, it may execute the actual supply task as agent for the civil agency which has been given the primary responsibility. In that event, however, the Army would have no responsibility for determining or reviewing the requirements. The Army would then merely furnish technical advice and carry out the supply or shipping requests and would receive the necessary funds from the civil agency.

In military government logistical planning, there are three progressive phases; namely, determination of objectives, policies, and programs.

Objectives

Objectives may include the following:

1. To obtain maximum support of the occupied economy for the military effort.
2. To prevent disease, starvation, unrest, and conditions prejudicing or interfering with military operations.
3. To support the indigenous economy through substantial technical and economic assistance.

4. To achieve maximum utilization of indigenous resources supplemented by imports only as necessary.

However, objectives may be short-term or long-term.

Short-term objectives are those objectives that are imposed by an immediate need to alleviate the hunger, disease, and unrest of the civilian populations in the path of war and to prevent conditions which may interfere with the military effort.

Short-term objectives may also include the conversion to military use of such local resources as can be diverted to aid the military effort and to hasten the end of hostilities. However, this will not be accomplished at the expense of the civil mission of the commander.

Long-term objectives are those objectives that derive from national policies with regard to the revival, rehabilitation, and reconstruction of the economy of the occupied area, as well as from international agreements to contribute such civil economic aid to war-torn communities.

Initially, short-term objectives may influence a purely relief approach, however, there must be a general economic approach if the long-term objectives are to be met at a minimum cost to our own economy. A program that is limited to items of immediate relief and that is not integrated with the other aspects of the economy may, in the long run, generate a greater demand for more relief supplies.

Military plans must contemplate reducing the need for the relief approach by holding destruction to the minimum necessary to achieve purely military objectives, by restraining local procurement to that which is excess to the minimum needs of the local economy, and by stimulating local productive capacity in order to increase the excess and thus to strengthen the ability of the local economy to meet its own requirements and to contribute to the military effort.

Policies

Policies comprise the measures employed to achieve the objectives determined. Characteristic policies may relate to: immediate relief; short-range rehabilitation and reconstruction; long-range planning and programming; furnishing technical assistance to the indigenous government; or supervising distribution and utilization.

Programs

Programs are quantitative expressions of policy.

Characteristic programs would be: direct relief programs; programs to support the indigenous economy; and programs which serve common military and civilian purposes, such as repair of railroads, bridges, communications, and public utilities by the Army.

The commander should review requirements under such programs in terms of: relation to a quantitatively defined objective; an integrated plan; availability of supplies and transportation; possible direct procurement of relief supplies; and the possible substitution of items.

Conclusion

We have seen thus far that the Army's responsibilities in World War II were extended to include relief and rehabilitation in territory occupied by our troops. This increased the basis of logistics to include civil as well as military factors. Certainly, greater emphasis than heretofore was placed on the civil factors.

Coincident with this, a military government service organization came into being. Because of its close proximity to the civil

population, economy, and resources, the provision of the logistical elements arising therefrom, such as supplies, facilities, and services, has in large measure merged with and become identified with the military government mission.

That military government mission is to assist military operations, to assist the commander in fulfilling his obligations to the civilian population which are imposed upon him by international law and the customs of warfare, and to further national policies.

Thus it is that military government logistics, in liberated or occupied territory, can be said to engage the civil as well as the military characteristics of logistical support of the commander's broader mission.

However, since out of this mission arises the commander's responsibilities, all echelons, staffs, and technical services have an interest, and participate in close co-ordination with the military government service organization.

Our ultimate national objective will ever be the early withdrawal of our military forces consistent with leaving behind a peaceful, economically stable nation with a representative form of government.

Consequently, logistical thinking must contemplate the civil mission as well as the military mission of the commander. The civil potential supports the military effort; the military potential supports the civil effort. Achieving a balance between both and meeting the implications of both is the function of military government logistics.

We must win the peace as well as the war.

The American policy of establishing its defense line overseas has a vastly important corollary. You always have to provide logistic support for dependent allies.

Lieutenant General Williston B. Palmer

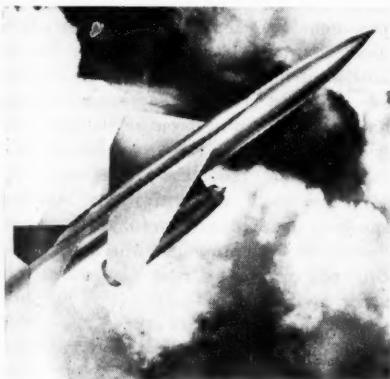
MILITARY NOTES

AROUND THE WORLD

UNITED STATES

Pilotless Interceptor

Below is an artist's drawing of the new F-99 *Bomarc* pilotless interceptor, now under development for the Air Force. All



details regarding the project—other than the fact that a pilotless aircraft is under development—are highly classified.—News release.

Improved Anesthetic

A new anesthetic has been developed which is said to be faster in effect and less inflammable than ether. The new compound is known as trifluorethyl vinyl ether.—News release.

Private Vessels in Navy Service

The National Federation of American Shipping reported recently that a fleet of 119 privately owned American ships was devoting all its time to carrying military cargoes for the Navy's Military Sea Transportation Service.—*The New York Times*.

Fast Tumbling

Crewmen escaping from a plane should not have to tumble at a rate faster than 90 revolutions a minute for 3 seconds or 50 revolutions a minute for 2 minutes, it appears from studies reported at a meeting of the Aero Medical Association.

These figures apply with the center of rotation about the hips. Figured for the center of rotation about the heart, 25 to 30 revolutions a minute higher are safe.

At these rates, pain in the head region and tiny hemorrhages occur on the lining of the eyelids and covering of the eyeball, showing that blood circulation is being affected. The impairment of circulation at these speeds, however, was not serious.

Rates of tumbling between 180 and 240 revolutions a minute following seat ejection and free fall have been reported.

Such rates may be a source of danger to the escaping crewmen.—*Science News Letter*.

Petroleum Products

The armed forces expect to buy about a billion dollars worth of domestic petroleum products during the current fiscal year, an increase of 25 percent over the previous fiscal year. This year's purchases are estimated to equal about 8 percent of the finished products of domestic refineries.—*Army Times*.

Special Lubricants

Pine trees growing in southeastern United States soon may help the Air Force stay aloft in the Arctic's frigid winter climate. The trees produce pine gum from which special lubricants can be made. The lubricants help jet engines start and run in temperatures that plunge to 75 degrees below zero Fahrenheit. The synthetics remain fluid at those low temperatures, and do not become gummy like ordinary petroleum lubricants.

Chemists of the Office of Naval Research, working with scientists of the Department of Agriculture, have made pinic acid out of one of turpentine's major constituents, alpha pinene. They have mixed high-boiling alcohols with the pinic acid to obtain the excellent qualities desired for the synthetic. At present, pinic acid has been made only on a test tube basis, but methods of manufacturing the fluid on a commercial basis are being explored.—*Science News Letter*.

Cable Tester

One hour's work, testing a guided missile's 100 or more cables, is done in 1 minute by a new device developed at the Army's Redstone Arsenal, near Huntsville, Alabama. The tester can be adapted for use in such things as jet aircraft, telephones, and other devices in which cables are used. It stops when a fault is encountered and, at the same time, a light goes on indicating the type of fault and also the number of faulty wires.—*Popular Mechanics Magazine*.

Arctic Cable

All-weather, rubber-jacketed electric power cable for Arctic use has been developed by the Army.

The new military cable, which also operates successfully under tropic and temperate conditions, remains flexible at temperatures as low as minus 65 degrees Fahrenheit. Unlike standard commercial cables which tend to act like springs when frozen, it can be uncoiled with no danger of snapping back. It does not become brittle at low temperatures nor as stiff as commercial cable.—News release.

Transistors

Ingots of precious germanium have been successfully produced by a method that promises to revolutionize the manufacture of transistors.

Transistors are rugged pea-size chunks of germanium that can perform many jobs now done by vacuum tubes. They can be used in radios, television sets, hearing aids, and giant electronic "brains." They are valuable because they conserve space and electric power, because they are rugged, and because they last longer than vacuum tubes under the proper conditions.

As many as 100 wafer-thin layers of specially treated germanium can be produced in a 6-inch ingot by the new method. Only one or two layers can be produced by other methods.

Still in a "laboratory stage," the method turns out germanium layers mixed with a trace of gallium. These layers are separated by thicker regions of germanium containing antimony. One section of the "gallium-doped" layer in each transistor does the work of the grid in a vacuum tube. The "antimony-doped" layers take the place of the cathode and plate in a tube. This "mass" transistor production is expected to cut transistor cost. At present, the revolutionary electronic devices cost more than vacuum tubes.—*Science News Letter*.

Heat-Sensitive Cable

A newly developed heat-sensitive cable, only seven-hundredths of an inch in diameter, has proved itself highly effective in minimizing aircraft fire hazards under flying conditions.

The cable's effectiveness was revealed in preliminary reports of exacting fire tests conducted by the United States Air Force and the Civil Aeronautics Administration.

In tests, the cable was installed in the nacelle of a 3,600-horsepower Air Force *B-36* pusher-type engine which was set afire repeatedly in a wind tunnel, thus simulating actual flying conditions. In a matter of seconds, in each instance, the cable sounded alarms which would, in flight, alert a crew in ample time to take remedial action.—News release.

Mountain Research Center

Rugged civilian teams in laboratories that are chained to the wind-swept peak of New Hampshire's 6,288-foot Mount Washington are engaged in research designed to save the lives of servicemen.

Night and day, jet engines roar in a battle against winter-flying risks atop the mountain whose summit is said to be stormier than the polar ice cap.

Wild winds lash the peak 4 months a year, reaching velocities of 75 and 110 miles an hour. In 1930, the world's wind record—230 miles an hour—was clocked atop Mount Washington.

Temperatures drop to minus 46 degrees, and, on objects exposed overnight, rime has been known to build up a thickness of 7 feet.

Clad in parkas, men work in mist and wind, testing prototype jet engines for Navy and Air Force fighters and bombers. Subzero temperatures simulate conditions that affect jet engines when a plane makes its landing approach. Critical icing conditions often take place during this phase of flight.—News release.

Versatile Plane

A light, high-performance aircraft has been developed which lends itself to a variety of uses. The new plane—the McKinnie *165*—was designed principally for sporting use and for business fliers, but military requirements were also considered, and the type can be adapted for basic flying training, liaison duties, or close ground support operations.

The plane is a two-place, single engine,



The McKinnie 165 all-metal monoplane.

low-wing monoplane of all-metal construction, fitted with fully retractable undercarriage, wing flaps, and selective pitch propeller. It is powered by a 165-horsepower engine.

In a military role the plane may be fitted with racks for ten 2.75-inch rockets, or small fragmentation or napalm bombs, two .30-caliber machine guns, and a gun camera.

The plane has a span of 23 feet 6 inches, a length of 18 feet 3 inches, and a height of 7 feet. It has a maximum speed of 175 miles an hour, a cruising speed of 160 miles an hour, and a range of from 750 to 1,050 miles.—News release.

Ground Observer Program

The Ground Observer Corps program is bringing in volunteers at the rate of 2,000 to 3,000 new members each week. Current membership is 265,000 but the goal is for 500,000 as soon as possible.—*Air Force*.

Airborne Uranium Detectors

The search for uranium in Arizona is being aided by an air survey of prospective uranium fields by light aircraft equipped with devices that detect radiation. Some 3,000 square miles in northern Arizona have been surveyed and mapped by field geologists of the Atomic Energy Commission.—News release.

Robot Safety System

A robot safety system which will automatically keep an atomic pile from blowing its top has been developed.

It is a packaged automatic control system to monitor the operation of the piles in which nuclear fission takes place. A series of electronic instruments control the beginning of nuclear reaction and, once in operation, regulate the rate of power generation at predetermined levels.

In atom bombs, nuclear fission is uncontrolled and happens in an instant's time. In a nuclear pile, it is controlled, and the power resulting from the splitting of atoms is permitted only to dribble off in required amounts. Rods of boron steel control the activity of neutrons. The robot system will keep pushing these rods in and out so that the precise amount of control desired is obtained.

The system includes a multiplicity of electronic instruments, amplifiers, servo-amplifiers, recorders, controllers, and servo-motors.—*Science News Letter*.

Psychiatry

Modern psychiatry has restored to active duty 70 percent of the men who suffered mental or emotional breakdowns in combat in Korea, according to a pamphlet released by the National Association for Mental Health. The pamphlet also stated that psychiatric discharges from the armed forces have been reduced to "between one and two per thousand, in contrast with the twenty-five per thousand in 1943."—*The New York Times*.

Air National Guard

The Air National Guard will triple the number of its tactical and support units in the next 3 years in a move to step up enlistments.

The program appears to be in line with the Secretary of Defense's view that increased reliance should be placed on reserve forces in peacetime.

According to the Acting Chief of the National Guard Bureau, 168 "tactical and technical" squadrons would be added to the present 84 squadrons by about 30 June 1956.

The purpose of the program is to make room in organized units for large numbers of applicants, including men who are obligated to serve in reserve forces for 6 years after leaving active military service.—News release.

Giant Motors

The most powerful electric motors known to have been built were installed recently at the Arnold Engineering Development Center, Tullahoma, Tennessee.

Installation of the motors, which are as high as a two-story house, is the first major step in the assembly of what is believed to be the world's largest rotating machine. The two motors, rated at 83,000 horsepower each, and a smaller pair, rated at 25,000 horsepower each, will produce a total of 216,000 horsepower to drive five huge compressors which will produce man-made hurricanes for transonic and supersonic wind tunnels at the Arnold Engineering Development Center. This center is the newest of the nine research, development, and testing centers of the Air Force's Air Research and Development Command. The center's facilities, now under construction, will provide the nation with the means for testing and evaluating supersonic aircraft, guided missiles, and aircraft engines of the type required to keep our nation's future air power the best in the world.—News release.

United States Troops Are in Half of the Countries of the World



Tank Retriever

A new 50-ton streamlined tank recovery vehicle—the *T74*—is now going into quantity production.

Specifically engineered to support the latest model medium tanks, the *T74* is capable of towing damaged tanks cross-country as well as hoisting and winching tanks out of mud or deep ditches, and when the need arises it flips upright an overturned tank. Hydraulically operated winches provide sufficient hoisting power to pick up and carry medium tanks. A front spade, designed to stabilize the retriever for extremely heavy lifting or towing, can also be used to improve on-the-site terrain if adverse ground conditions are encountered.

One of the features of the new vehicle is that the retriever crew can do the job from inside the tank without exposure to enemy fire.—*Combat Forces Journal*.

Aircraft Systems Boards

More informative than a "know-all" ouija board are the new "show-all" aircraft systems boards developed for training Air Force and Navy mechanics and technicians.

Complete aircraft systems, realistically hooked-up with all the equipment they operate, are compactly arranged on board panels with name and function tags for all parts. These mobile training unit boards are made for every system of the airplane—electrical, hydraulic, heating, and anti-icing.

Nearly all flight conditions can be simulated on the training panels, together with troubles which might occur if a part failed. Complete even to wiring numbers, the boards are made with parts identical to those going into the production aircraft.—News release.

INDIA

Road Link

Indian Army engineers are constructing a new road link between India and Nepal. The new highway, 61 miles long, will replace the existing land route between India and Khatmandu, the capital of Nepal.—*The New York Times.*

JAPAN

Warships

The Japanese Government is setting up a single national project for building warships for its own use and for sale to other countries.

The National Safety Board (Defense Ministry) is planning to build 17 small warships during the current fiscal year, some of which are destined for Southeast Asia nations.—News release.

Television Station

Japan's first commercial television station—also the first of its kind in the Eastern Hemisphere—recently began beaming programs from Tokyo.

Built at a cost of 1 billion yen (\$2,777,000), the station is claimed to be the equivalent of the best in the United States.—News release.

KOREA

Jet Fighter Net

A cheap, web-like device stretched across Korean air strips has saved an estimated 2½ million dollars worth of American *Sabre* jet fighters from crashing.

On 10 occasions since the device was introduced, damaged *Sabre* jets made emergency landings into a "tennis net" that pops up near the end of short air strips and slows the supersonic fighter from its 140-mile-an-hour landing speed to an easy stop.

The net, similar to an aircraft carrier's arresting gear, is made of nylon webbing, steel cable, and heavy anchor chain.—News release.

USSR

Planting Increase

The Soviet Union reports that 8 million more acres of grain and other crops were planted there this spring than in the spring of 1952.

Total acreage in the Soviet Union devoted to grain and other crops in 1952 throughout the entire year has been reported by the Soviets—385 million acres. This shows an increase over the prewar figure of 378 million acres for such crops.—*Science News Letter.*

CHILE

Primary-Basic Trainer

Chile has signed a contract of more than a million dollars for a sizable quantity of Beechcraft *Mentor* two-place primary-basic trainers. The contract represents the first foreign purchase of the *Mentor*, which was adopted recently to replace the *T-6* as the standard basic trainer for the United States Air Force.

The *Mentor* (United States Air Force designation *T-34A*) is an all-metal two-place trainer. Powered by a 225-horsepower engine, it has a top speed of 189 miles an hour and a maximum range of 975 miles.—News release.

CANADA

Tents

The Army has adopted as standard equipment two new tents which will replace eight types of tents now in use by troops operating in temperate climates.

One of them weighs only 80 pounds and can accommodate two campbeds or four men without beds. It has a floor space 14 feet by 8 feet and a wall 2½ feet in height. It will replace five different types of tents of the "pup" variety.

The other, with a 14- by 14-foot floor and a 3½-foot wall, weighs 160 pounds. It will replace the familiar bell-shape or circular tent and two similar types now in use.—*The Canadian Military Journal.*

ETHIOPIA

Mutual Defense Agreement

Ethiopia and the United States have signed a mutual defense agreement under which the United States will provide military equipment and training aid to Ethiopia's armed forces.—News release.

AUSTRIA

Danube Pact

Austria and Hungary have concluded an agreement on shipping on the Danube.

Under the agreement, Austrian ships may carry passengers or freight through Hungary to Yugoslav ports. Hungarian ships may go through Austria to Germany.

The shipping pact is regarded as an important step toward restoring the former international character of the Danube area.—News release.

ITALY

War Reparations

Italy has agreed in principle to pay Greece 3 billion lire (\$4,600,000) in war reparations.—News release.

Italian-Built Sabres

An agreement was signed recently for the manufacture of *F-86 Sabre* jet fighters in Italy. At the same time, it was announced that the United States Air Force had placed an initial order with the Italian Government for 22½ million dollars worth of Italian-built planes.—News release.

THAILAND

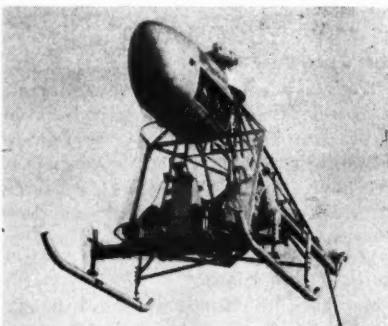
Mining and Smelting Proposal

Six of Japan's largest steel manufacturing firms are making negotiations with the Thai Government for setting up of a steel plant—the country's first heavy industry. The proposal calls for joint Thai-Japanese mining and smelting of iron-ore deposits. The Japanese companies would hold 49 percent of the shares and the Thai Government 51 percent.—News release.

FRANCE

Unusual Copter

A new idea in helicopters—putting the engine overhead—is being tried in France. It eliminates some of the complicated drive shafts and gearing necessary when the



The new French helicopter in flight.

engine is below or behind the pilot. The designer and the manufacturer claim a complete absence of vibration, a reduction in weight, and high performance on low horsepower.

The machine weighs only 880 pounds empty.—*Popular Science Monthly*.

United States Army Hospital

A 250-bed operating and general hospital soon is to be opened at Orleans for United States soldiers of the communications zone command stationed in and near the town.

Rebuilt from a three-story French tuberculosis clinic, the hospital will be fitted with physiotherapy and neuropsychiatric wards, and dental, X-ray, and emergency clinics.—News release.

GREECE

Trade Pact

Greece and Hungary recently signed a 1-year trade agreement for the exchange of 4½ million dollars worth of goods.—News release.

NORWAY

Civil Defense

Civil defense authorities in Oslo have started to draft air raid wardens, because too few have volunteered.—Norwegian Information Service.

YUGOSLAVIA

Iron Gate Pact

Yugoslavia and Rumania recently signed an agreement for the joint administration of the Iron Gate section of the Danube. The agreement lays down the principle of free navigation in the section—a narrow gorge between the two countries.—News release.

Political Commissars

Marshal Tito recently abolished the system of political commissars in the Yugoslav armed forces, asserting that present conditions no longer required them.

Not mentioned in Marshal Tito's order was the fact that this will undoubtedly make it easier for Yugoslavia to carry on with growing plans for integrating her military establishment with Western defense projects.

The political commissars, who wore uniforms and were equal in rank with military commanders in the Yugoslav Army, were introduced in imitation of Soviet military practice in the early days of partisan warfare against Germany.—*The New York Times*.

PHILIPPINES

Radar Networks

Manila is being screened with a radar network, the first in the Philippines. Two more radar systems, each 50 miles outside Manila's boundaries, will be installed immediately after completion of the Manila radar screen.

The equipment was turned over to the Philippines by the United States under the Mutual Defense Assistance Pact.—News release.

WESTERN GERMANY

British Staff

The British High Commission staff in Western Germany has been trimmed by more than 100 since the first of the year and now is down to just over 1,000.

When occupation began in 1945, the staff numbered 22,000.—News release.

Dollars-Marks Exchange

Dollar-hungry Western Germany earned almost 45 million dollars in the first quarter of this year through purchases of German marks by United States servicemen and Army-sponsored organizations.

The 45-million-dollar figure does not include purchases of food, technical equipment, and other items by official military agencies, nor purchases under the offshore procurement program of the United States armed forces.—News release.

Monetary Agreement

Western Germany and Great Britain have taken a further step toward freeing their currencies by signing a new monetary agreement.

This pact permits payment of transactions between Western Germany and the sterling area in either German marks or sterling. It replaces a 1950 agreement which restricted payment to sterling.—News release.

Trade Agreement

Western Germany and Japan recently signed a new trade agreement which promises to boost their trade by 50 percent during the current fiscal year.

The new pact provides for an exchange of goods worth 45 million dollars from each side, as against a 30-million-dollar volume under the previous agreement.

Western Germany will send chiefly machinery, tools, optical goods, chemicals, and motor vehicles. Japan will send mainly tobacco, tea, textiles, paper, and wood.—News release.

GREAT BRITAIN

'Sarah'

A new radio device has been developed for saving air-crash survivors, shipwrecked seamen, and stranded personnel in mountains, jungle, or desert.

Known as "Sarah" (short for search and rescue and homing), the device is a ra-



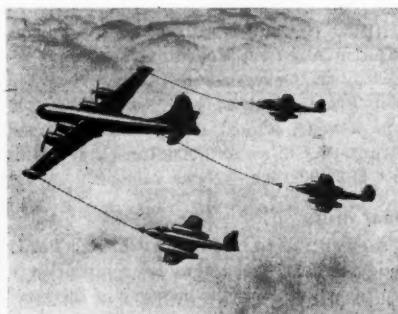
The new radio device being demonstrated.

dio beacon which transmits a coded pulse to guide searching aircraft and is attached to the survivor's life jacket. The device consists of the beacon weighing 20 ounces with a 32-ounce battery.

The stranded man operates the beacon by pulling a ring on the equipment which releases a 31-inch flexible aerial and starts the transmitter. Transmission can be maintained for 20 hours with a maximum range of 66 miles to an aircraft at 10,000 feet. The distress signals are displayed on a cathode ray tube in the rescuing aircraft. The rescuing craft then "homes" on the signal to reach the stranded man. A receiver-transmitter attached to the life jacket provides the means of verbal communication between rescuer and survivor at close range.—British Information Services release and photo.

Triple Refueling

It was recently revealed that the United States Air Force and the Royal Air Force have collaborated in the use of British equipment which enables three fighter aircraft to be refueled in the air simultaneously from a single tanker aircraft.



An American KB-29 aerial tanker refueling three Royal Air Force Meteor jet fighters.

This is the latest development of the probe and drogue system of flight refueling which was adopted by the United States Air Force some 4 years ago.—British Information Services release and photo.

Sturdy Radio

A waterproof and blastproof radio that will work on any kind of electric current is to be made for North Atlantic Treaty forces in Europe by a British electrical firm. Some 75 concerns in Britain, Germany, France, Belgium, Holland, and Italy competed for the order.—News release.

Air Terminal

The world's most modern air terminal, capable of handling 16,000 air passengers comfortably in 1 day, has started operating on the downtown site of London's 1951 Festival of Britain exhibition. It contains arrival and departure halls, hotel room service, banking offices, and buffet and lounge facilities.—News release.

BOLIVIA

Ends State of War

Bolivia recently ended her 10-year state of war with Germany. Bolivia declared war on the Axis on 7 April 1943.—News release.

BRAZIL

Pig Iron Production

Brazil is the largest pig iron producer in Latin America, according to a recent report by the Government. The report stated that Brazil's output has reached 760,000 tons a year, almost double the combined output of Chile's 240,000 tons and Mexico's 203,000 tons.—News release.

Steel Mill

A steel mill to be installed in São Paulo and backed by national and foreign private capital will bid for the mastery of the steel market in Brazil. It is expected to produce more than the Volta Redonda steel mill, which is controlled by the Government.

Construction of the steel mill will begin this year with operation slated to begin during 1956.

Production is planned at 300,000 tons in the first year and is to be gradually increased to a million tons, which would exceed the output of the Volta Redonda.
—*The New York Times*.

CZECHOSLOVAKIA

Unlimited Overtime Work

The Czechoslovak Parliament has decreed that all men less than 60 years of age and women less than 50 can be forced to work unlimited hours for the state or community outside of their regular working time.

This means that a person who has put in a full work week can be forced either to work unlimited additional hours in his own factory, or he could be sent to work in another plant, or in the fields or mines—whenever the Government decreed.—*The New York Times*.

EASTERN GERMANY

Trade Agreement

A new agreement signed recently provides that Eastern Germany's trade with Communist China will jump 34 percent this year. The agreement calls for an increase in shipments of East German machines in exchange for oil, grain, fats, and ore.—News release.

COMMUNIST CHINA

Higher Education

Communist China has 220,000 students in schools of higher education, and more than 1 out of every 4 is in training in various fields of engineering, according to an announcement by the Vice Minister of Higher Education.—*The New York Times*.

Collective Farming

Ever since the Chinese Communists came to power and initiated Moscow-bred economic and political patterns, they have used Manchuria as their laboratory and testing ground. Now it seems Manchuria is to lead the way toward Soviet style collective farming. Recent reports from a farm conference show that 545 state farms have been established in Manchuria, covering 466,830 acres of cultivated land. There are 43,000 workers on the project, including 20,000 on 29 "mechanized" farms.—*The Christian Science Monitor*.

Nation-Wide Census

Communist China has announced that she will take a nation-wide census this year in connection with the national election. The plan as outlined by the New China News Agency indicates that if it is carried out the census probably will be the most thorough in China's history.

The population of China is usually set at 450 million, but estimates vary from 350 million to 550 million. There are many areas where no census has ever been taken.—News release.

FOREIGN MILITARY DIGESTS

The Fourth Arm

Digested by the MILITARY REVIEW from an article by Major Reginald Hargreaves
in "The Army Quarterly" (Great Britain) April 1953.

IN 1793, when the French Revolutionary authorities harnessed the entire national effort to the prosecution of their struggle against the forces of the British-Austro-Prussian coalition, the world was confronted for the first time with the concept of all-out "total" war. Concurrently, a fourth arm was added to those engaged in waging combat on sea, on land, and in the air.* This took the form of well-organized and widely disseminated propaganda.

Initial Employment

Prior to the Gallic invasion of Holland in 1794, for example, an intensive propaganda campaign sought to reassure the Dutch that liberation rather than conquest—and certainly not the bulging coffers of the Bank of Amsterdam!—was the motive which had brought the *sans culottes* swarming across their border. With the British contingent too enfeebled, through the desertion of its Austrian and Prussian allies, to stem the floodtide of invasion, and with a strong prorevolutionary party of Hollanders opening their

arms in welcome to their "liberators," the establishment of the Batavian Republic offered few difficulties. In the outcome, the hapless Dutch were given a full decade in which to rue the gullibility with which they had accepted at its face value a propaganda whose lavish promise was to be most woefully falsified by subsequent events.

Once again, with the descent of Bonaparte and his ragged *banditti* upon Italy in 1796, every device of propaganda was employed to persuade the Italians that the armies of the Republic had come, not to make conquest, but to deliver their downtrodden country from the hated Austrian yoke, and in all ways to relieve their innumerable distresses. When, however, Parma and Mantua had each been "relieved" of a cool 2 million francs and Lombardy of some 7½ million francs, the propaganda campaign which had preceded Napoleon's predatory foray was seen in its true light—as nothing more than a successful attempt to pull the wool over the sheep's eyes as a preliminary to its ruthless sacrifice.

In the outcome, despite Italy's temporary impotence under the heel of the con-

* The air can specifically be included, since a military observation balloon made its appearance at the battle of Fleurus, fought on 26 June 1794.

queror, resentment at the duplicity the little Corsican had practiced was deep and lasting. In the final count, the "Scourge of Europe" was confronted with no more implacable enemies than those Italians he had once brought to submission as much by false promises as by force of arms.

Thus quite early in the course of its first widespread employment, it was clearly demonstrated that, whatever its initial success, propaganda which is lacking in fundamental validity inflicts an injury on its sponsors from which it can never be anything but toilsome, uphill work to make recovery.

Not a New Weapon

Although the French were the first to employ carefully organized propaganda on a widespread scale, in itself the device was by no means a new phenomenon of war. In earlier times, however, its dissemination had rarely been extended to the belligerent countries' civil populations.

Politico-military propaganda was certainly practiced by the early Greeks; and Gibbon in his *Decline and Fall of the Roman Empire* refers to the scattering among the enemy of what he describes as "libels"—satirical lampoons designed to undermine confidence in the probity and professional competence of the adversary's military leaders. Equally, medieval warfare was not above the employment of that ubiquitous go-between, the herald, as a means of spreading "alarm and despondency" among the ranks of the enemy. In his capacity as envoy, in the delivery of his message the herald was afforded the widest scope to include a little artfully phrased propaganda, specifically designed to extol the invincible qualities of the side he represented, and underline the miserable fate awaiting those who had the temerity to oppose it. Shakespeare, with his usual genius, recognized the propaganda potential of this licensed mouthpiece to the full. Thus, in the speech of the French

herald to King Henry V, delivered in the presence of the warrior-prince's sick and dispirited army, there is introduced a deliberately threatening note, whose ulterior purpose is clearly manifest:

Thus says my King: . . . Bid him consider of his ransom; which must proportion the losses we have borne, the subjects we have lost, the disgrace we have digested . . . For our losses, his exchequer is too poor; for the effusion of our blood, the muster of his kingdom too faint a number; for our disgrace, his own person, kneeling at our feet, but a weak and worthless satisfaction. . . . And tell him for conclusion, *he has betrayed his followers, whose condemnation is pronounced.*

However, the most spectacular and far-reaching propaganda effort ever to be initiated and largely carried through by one man was the crusade undertaken by Peter the Hermit (Peter of Amiens, A. D. 1050-1115) to arouse Christendom to a militant attempt to reclaim the Holy Places from the hands of the hated Moslems. The effect of his oratory, animated as it was by the loftiest spiritual exaltation, was astounding. Men clamored for the privilege of assuming the surcoat adorned with the sign of the Holy Cross; and despite the sanguinary fate which overwhelmed the first two Crusades, the effect of the initial propaganda was sufficiently powerful to persuade a third, and even stronger expedition, to take the hazardous road that led to Jerusalem. In effect, by 1270, when the seventh and last Crusade ended with the expulsion of the Christians from their stricken and untenable strongholds, fervent and unremitting propaganda had kept an occidental army in action in the Near East, over extremely difficult lines of communication, for some 84 years.

A curious blend of politico-religious fervor characterized much of the pungent and voluminous propaganda of the Puritan element in that struggle between King and Parliament which will always be associated with the name of Oliver Cromwell. Completely overwhelming the feeble counter-efforts of the Royalists, a positive spate

of pamphlets, lauding the Parliamentary cause, poured from the presses; all of them couched in that curious amalgam of arrogantly intolerant self-righteousness and political venom by which the "Round-head" publicists were so consistently distinguished. From John Milton and Bishop Hall to the anonymous scribbler who went by the *nom de plume* of Smectymnuus, quills were frantically busy adding to the stream of these persuasively partisan tracts; of which to this day more than 50,000 specimens survive.

'Preaching Soldiers'

Supported by a small but vociferous press, headed by *The Moderate Intelligencer* and amplified by a number of carefully vetted news letters, Parliamentary propaganda found yet another vigorous—if sometimes dubitable—ally in the "preaching soldiers" which for a time were such a feature of the "Roundhead" army. Despite orders forbidding their assumption of the role of preacher-propagandist, accounts continued to circulate "of the manner in which they interrupted sermons, held public disputations with ministers on points of doctrine, and thrust themselves into pulpits." There was certainly no lack of warmth in the terms employed by these martial interlopers in putting their case against the "accursed malignants"; although a nice judgment might well aver that they seriously jeopardized the propaganda value of their submissions by grossly overstating them.

Wise old Michel Eyquem, Sieur de Montaigne, once pronounced, "I speak truth; not my bellyful, but as much as I dare." And it is as well to bear in mind that restraint often proves a better friend to the fervent propagandist than well-intentioned but hysterical exaggeration.

What might be termed the first purely secular propaganda effort to be launched in time of war was sponsored by the American authorities in the early days of the

Colonists' hard-fought struggle for independence. Fully aware of the extreme reluctance of a considerable number of Britishers to take up arms against their kith and kin across the water, and keenly alive to the fact that many of the red-coats and their Hessian comrades were men recruited from the soil. Congress authorized the clandestine distribution of the following alluringly phrased pamphlet among the troops concentrated under "good-natured Billy" Howe in New York.

COPY OF A RESOLUTION BY CONGRESS

Resolved: That these States will receive all such foreigners who shall leave the armies of his Britannic majesty in America, and shall chuse to become members of these States, and they shall be protected in the free exercise of their respective religions, and be invested with the rights, privileges, and immunities of nations, as established by the laws of these States; and moreover, that this Congress will provide for every such person, fifty acres of unappropriated land, in some of these States, to be held by him and his heirs as absolute property.

Anything more nicely calculated to seduce from his existent allegiance some land-hungry Hessian or bucolic Yorkshireman, homesick for the feel of a plow and the sight of crops burgeoning on his familiar broad acres, it would be difficult to imagine. Little wonder that a constant stream of backsliders responded to the appeal, to the serious perturbation of British generals only too painfully aware that, over 3,000 miles of sea communication, the reinforcement of their dwindling armies could scarcely hope to keep pace with this shrewdly engineered wastage.

Unfortunately for the British, there was little they could put in the propaganda shop window by way of counterblast. "Gentleman Johnny" Burgoyne's proclamations on the eve of his advance from Canada, which ended in the *bouleversement* of Saratoga, were such an extraordinary admixture of pompous reproach and high-flown sentiment as to arouse nothing but Homeric laughter and earn for their author the derisory title of the *Chrononho-*

tonthologos of war. As propaganda they were, as the modern catachrestic has it, a distinct flop.

It can be added that Lafayette's intervention on the side of American liberty had a propaganda value with the Court of Versailles which definitely exceeded his far from negligible worth to the Continental Army in the field.*

Restoration of Naval Strength

Napoleon had learned something of the potentialities, and the snares, of widespread propaganda at the time of his campaign in Italy; where at least the technique of dissemination had left little to be desired. It was unquestionable that the right sort of pressure-suggestion could be enormously effective; and in his first personal attempt at compulsive publicity—designed to bring about the restoration of the strength and prestige of the Gallic navy—the future emperor could plead a cause that was virtually above criticism.

The fleets of D'Estaing and De Grasse, which had rendered the United States such powerful aid in their struggle for independence, had fallen into sad decay, and nothing but a nation-wide campaign to "boost" the sea service would suffice to restore it to its erstwhile strength and popularity. What is more, Napoleon, although he never fully grasped the mechanics of sea warfare, was fully alive to the fact that a prerequisite to victory over *perfidie Albion* was the immobilization of its fleet—a fleet whose miserable condition of 1778-81 had undergone progressive remedy as the decline of the Gallic marine had approached its nadir.

Fortunately for his designs, in Lewis Goldschmit, his press controller and chief propaganda agent, Napoleon had a man of quite exceptional ability. By birth a Portuguese Jew, Goldschmit's elaborate "pub-

licity" methods had an ingenuity and resourcefulness about them which the most enterprising twentieth century advertising expert could only regard with wistful envy. Under the constant stimulus of his patriotic appeals to civic pride and personal self-esteem, almost in a twinkling the French public became "navy-conscious" on a scale hitherto unprecedented.

Towns and cities vied with each other to present the fleet with much-wanted frigates and corvettes, while several of the *departements* undertook to bear the cost of a fully rigged ship of the line. With a nice admixture of personal vanity and prudent patriotism, a number of wealthy citizens—mostly army contractors!—were sufficiently conscience-stricken to come forward with offers of sums ranging from 4,000 to 30,000 francs, for the privilege of having named after them those of the smaller craft whose cost of construction they had furnished. The *Corps de la garde* raised the sum of 20,000 francs out of their very modest pay; and with varying degrees of cheerfulness and enthusiasm a number of regiments subscribed a day's pay from officers and men alike. Artists auctioned blank canvasses to the highest bidders with an itch to have their lineaments immortalized in pigment and at the same time climb on the patriotic band wagon. Money poured in; and the shipwrights' hammers rang loud and long at Brest, Toulon, Cherbourg, and in every slipway between Leghorn and Texel.

Navy Lacked Officers

Thanks to Goldschmit's magnificent propaganda, Napoleon got his navy—or, rather, the embryo of a navy, in the way of battleships and their armament. However, warcraft have to be manned, and when it came to officering his ships the little Corsican discovered, to his deep chagrin, that the Revolutionary guillotine had lopped off the heads of some 90 percent of the experienced naval officers of

* On another plane, the effect of Tom Paine's *Common Sense* cannot be exaggerated as propaganda for resistance to British demands.

the *ancien régime*. Moreover, with their death had perished the great repository of maritime lore which makes all the difference between just a collection of ships and a navy. About this there was nothing that propaganda could do; for naval officers, like navies themselves, take time to mature.

Revolutions, however, are invariably more concerned with pulling down in the present than with building up for the future; a grim fact which is ineluctably reflected in the quality—or want of it—in their surviving service personnel.

Propaganda Campaign in England

The same period witnessed a propaganda campaign in England which was particularized by an entire shift of emphasis during the earlier stages of its development.

At the outset of the long years of struggle, the English attitude toward the upstart Napoleon had been one of frivolous and extremely short-sighted contempt. This bellicose little cockchafer in the absurd tricorne hat and swaggering jack boots was surely too much in the tradition of *opéra bouffe* to be taken seriously! That at least was the outlook favored by the popular caricaturists. It was a mood of somewhat heady and unwarrantable self-confidence which found reflection in such impish lampoons as that depicting the little Corsican endeavoring to sail a small boat in a basin of water, to the vast amusement of the portly George III and his on-looking Court. The same effervescent spirit of disdain expressed itself in a widely popular ditty:

Come, I'll sing you a song, just for want of some other,

About a *small* thing, that has made a *great* bother;
A mere *insect*, a *pigmy*—I'll tell you, my hearty,
'Tis the Corsican hop-o'-my-thumb, Bonaparte.
This *Lilliput* monster, with *Brobdignag* rage.
Has ventured with Britons in war to engage:
Our greatness he envies, and envy he must,
If the *frog* ape the *ox*, he must swell till he
burst.

However, as the tide of Napoleonic success rose steadily higher, the threat to England's safety could no longer be dismissed with a light-hearted jest, or reduced to ridicule in a popular ditty's mocking jingle.

'The Corsican Ogre'

Wordsworth struck the new note of gravity in a torrent of heroic but minatory verse; and quick to adjust themselves to the changing mood, the caricaturists swiftly came to identify themselves with a propaganda campaign whose urgent purpose was to bring home to the happy-go-lucky, inconsequent Britisher the grim fact that in Napoleon he possessed an enemy it would be the wildest folly to underrate. In an amazingly short space of time "the Corsican Upstart" had been transmogrified into "the Corsican Ogre"; a creature of dread whose wicked cunning was only outmatched by the ruthlessness of his barbaric practices. So effective were the efforts to bring about a change of outlook that ultimately, in the child's mythology of terror, "Old Nick" came to yield pride of place to "Old Boney"; and exasperated nursemaids would cow their unruly charges with the scarifying verse:

Baby, baby, naughty baby,
Hush, you squalling thing, I say;
Hush your squalling or it may be
Bonaparte may pass this way!

Baby, baby, he's a giant,
Tall and black as Rouen steeple;
And he dines and sups, rely on't,
Every day on naughty people.

Baby, baby, he will hear you
As he passes by the house,
And he limb from limb will tear you,
Just as pussy tears a mouse.

Where propaganda is concerned, it is as well to envisage the *ultimate* as well as the immediate effect of what is being forced down the public's throat!

The adoption of a lofty attitude of superlative rectitude is a favorite device

of national propaganda in any dispute which threatens war; and the more dubious a nation's moral premises, the more impassioned—and nauseating—become its attempts at halo-snatching.

In 1854, for example, the Russians professed the gravest concern for the preservation of the Holy Places, alleged to be at the mercy of "the unspeakable Turk." The smugness of their protestations, however, failed to disguise the Muscovites' intention to seize the Dardanelles and secure that access to the warm waters of the Mediterranean which has always been a major aim of Slav policy. England, with a sharp eye on her communications with the Far East, and France, in serious need of a little glamorous window-dressing to distract attention from the instability of her domestic politics, made a superlative virtue of going to Turkey's aid. Adversity having brought Mr. Gladstone a particularly unendearing bedfellow, that master of ductile euphemism sought to placate the simon-pure element among his followers with the staggering sophistry, "We are not fighting *for* the Turks, but *against* the Russians!" By the time the ensuing Crimean campaign was well underway, however, pious pronouncements with regard to the Holy Places had conveniently been forgotten; and the allied expeditionary force bent itself to the age-old—and seemingly perennial—task of confining Russia within her own borders.

Civil War Propaganda

In its own quiet, unostentatious way, one of the most effective propaganda efforts ever known was that organized by President Lincoln, for the purpose of impressing the general public in England with the justice of the Northern cause in the American Civil War. Lincoln's principal representative in Great Britain was that resourceful fanatic, Henry Ward Beecher, supported by a score of assistants, of whom by far the most valuable was the

authoress, Harriet B. Stowe. From 1862 onward there can have been few families that had not wept with Little Eva and Uncle Tom, laughed and cried with Topsy, and shuddered at the brutalities of Legree. For as "a novel with a purpose," *Uncle Tom's Cabin* brought a more compulsive influence to bear on public opinion than had even the works of Charles Dickens, for all their fiery protests against sociological evils ranging from the iniquities of "Bumbledom" to the infuriating frustrations of "the Circumlocution Office." Despite an initial bias in favor of the South, within a few months "abolition" was "sold solid" to all the more liberal-minded throughout the entire British Isles.

The 'Ems Telegram'

Bismarck's unscrupulous manipulation of the famous "Ems telegram" was a deliberate fabrication of propaganda, designed to imbue the German people with that unshakable faith in the justice of their cause—with as an inevitable corollary, an equally fixed belief in the want of justification in their enemy's—with which it is every administration's aim to try and vindicate its departure into war. Moreover, since the fact that the Iron Chancellor had been guilty of outright forgery was not disclosed until long after Germany had achieved her victory, chicanery for once escaped the nemesis which usually awaits the introduction of falsity into wartime propaganda.

Invasion of Belgium

There was another wild, and it must be admitted, successful, attempt at halo-snatching with the outbreak of hostilities in 1914. With Germany's invasion of Belgium was torn up that "scrap of paper," in the form of the instrument guaranteeing the violated country's immunity from aggression, to which Germany, together with Great Britain and France, had earlier set her hand. In the sound and fury of the

Franco-British propaganda, the fact was entirely overlooked that treaty-breaking had not been exclusively confined to the *Bosches*. Under the provisions of the (unrecinded) pact of April 1839, guaranteeing Belgium's neutrality, it had been clearly laid down that Antwerp was to be regarded as "solely a port of commerce," without batteries or permanent works or any other fixed form of naval or military protection. Yet, by 1914, Antwerp had become positively ringed with forts, whose construction had been blandly ignored by Great Britain, while their design and the supervision of their erection had actually been supervised by the French General Brialmont.

Admittedly, Germany's breach of the treaty had been by far the more heinous; and since not one person in a thousand had so much as heard of the pact of 1839, allied propaganda was not called upon to essay the difficult task of proving that two wrongs can make a right.

'Old Contemptibles'

An odd example of the transmutation of a passing sneer into a most effective piece of propaganda is to be found in the story of the queer way in which the men of the 1914 British Expeditionary Force to France acquired their proud title of "Old Contemptibles."

It was at Aix-la-Chapelle, on 19 August, that the Kaiser promulgated the order of the day in which he exhorted his *feldgraus* at all costs to wipe out General French's "*verächtlich kleine Armee*"; literally, General French's "contemptibly little army." In his hasty translation of the copy of the order shown to him, Colonel Repington, representing *The (London) Times*, misread the governing word *verächtlich*—as *verächtliche*, which had the effect of turning the adverb "contemptibly" into the adjective "contemptible." The garbled translation of the order was seen by a Manchester reporter, possessed

of what can only be described as a far keener sense of propaganda-potential than the representative of *The Times*. It was through his agency that the vital, if inaccurately rendered, phrase reached the general press, and was, in all fidelity, passed on to the world at large. With a characteristic manifestation of humorous perversity, the British people, soldier and civilian alike, elected to find a title of honor in what had been transliterated as a piece of scornful denigration. And to be remembered as an "Old Contemptible" brings balm to the survivors of 1914 to this day.

Incidentally, the German-Italian attempt to popularize "desert rat" as a term of contempt for "Monty's" resilient Eighth Army boomeranged with amazing promptitude.

"Tween-War propaganda"

Two propaganda campaigns of the 'tween-war period exerted, in their respective ways, considerable influence on the course of events that led ultimately to World War II.

The deliberately encouraged *mystique* regarding the system of fixed defenses—never completed—along the borderland where France confronted Germany eventually bred that fatal "Maginot complex" which pusillanimously puts its faith in inert steel and concrete, rather than in an audacious, mobile army, inspired with the flaming spirit of the *attaque à outrance* and the will to give it reality.

In the second instance, when in 1935 Germany's undisguised rearmament encouraged Mussolini to launch his vile attack on Abyssinia, the clamor to impose "economic sanctions," vociferated by certain besotted but myopic League of Nations addicts, was accompanied by an equally strident demand for Great Britain's radical disarmament; oblivious to the fact that disarmament can never promote peace but can only be the outcome of it. Willfully blind to the consideration

that to impose effective "economic sanctions" is to commit an act of war which can only be justified by an ability, should the need arise, to wage war to the full, these purblind utopians clung obstinately to a concept of "collective security" which far more closely resembled a blueprint of *collective insecurity*. Lost to all sense of reality, the British League of Nations' Union launched an enormous propaganda campaign, heralding a "peace ballot" in which a questionnaire was distributed to some millions of potential voters, so artfully phrased that to frame a rational reply was to incur the almost certain risk of being written down as a jingo saberrattler. At the time, Britain's Parliamentary electorate stood at 28,288,076, of whom 22,001,837 had registered their votes at the most recent General Election. In the "peace ballot" those in favor of supporting the League "sanctions" and "collective security" totalled 6,784,368, as against 21,463,718 who definitely opposed the proposal as put or refrained from committing themselves to an answer.* However, with the support of less than 34 percent of the electorate the pressure brought to bear on the Government by the League "lobby" was such that Mr. Stanley Baldwin lacked the courage to put the issue of rearmament fairly and squarely to the country. As he subsequently confessed, with almost incredible naivety, "I could not think of anything that would have made the loss of the election, from my point of view, more certain." The outcome of this wickedly wrong-headed propaganda effort and the shameless political turpitude it occasioned was an armaments race in which Great Britain lagged behind so woefully that September 1939 found the services far less prepared for war than they had been in August 1914.

"When a strong man armed keepeth his

palace his goods are at peace"; and in no country is it part of a responsible minister's obligation weekly to bow his head to the pressure of a misguided propaganda campaign and acquiescently murmur, "The prophets prophecy falsely, and my people would have it so." The first thing that *any* people have a right to expect from their chosen leader is—leadership.

Those concerned with military "intelligence" may safely accept the axiom that "truth is entitled to a bodyguard of lies," for "intelligence" must sometimes traffic in deception. However, for propaganda, which is primarily concerned to foster enlightenment, always the safest and most effective card to play is the plain unvarnished truth. Hitler's contention—so enthusiastically endorsed by that astounding reincarnation of Ananias, Dr. Joseph Goebbels—that the greater the lie the more eager its acceptance by the general public is, at best, no more than the sublimation of a short-term device.* Moreover, as one bad law calls all law into disrepute, so the exposure of even one lie subjects all subsequent truths to the wary, hostile gaze of suspicion. Worth-while propaganda can never be "truth twisted by knaves to make a trap for fools." At its best propaganda is the art of persuasion by judicious emphasis. However, unless truth forms its hard core, it is prone to react in much the same way as the boomerang—with remarkably unpleasant results for the man who has launched it. Even the negative side of propaganda by the employment of *suppressio veri* is rarely to be commended. There is a muted ring about it which is little less than an open invitation to doubt.

* Apropos, the failure of the Germans' short-lived departure into mendacity during the early days of 1914, which put it about that the British ill-treated and often shot their prisoners out of hand, is a case in point. The British counter-move, which ensured a liberal stream of postcards from enemy captives to their friends and relations at home, had the effect of calling into question all official "hand-outs" regarding prisoners of war sent out by the German War Office.

* Of those who received the ballot papers some 16,688,911 did not bother to make a return. Obviously, their sympathy was not actively with the proposals put forward by the League of Nations' Union.

Reason and Emotion

Equally important is the selection of material so that it can be relied upon to reach and influence the ordinary mind. The thing to aim for is the simple and the direct; something, if possible, that satisfies both reason and emotion. Best of all is something so terse and vivid that it can be embodied in a slogan (In its own modest way, "Join the Navy and See the World" was one of the best and most successful efforts in propaganda ever sponsored, despite the pilot-officer's sardonic addendum, "Join the Royal Air Force and see the *next* world!") The mental diet once determined upon, thereafter it must be subjected to almost endless repetition:

reiteration is the time-honored accoucher of conviction!

Even the cynical contention that propaganda is anything you can make the gullible believe can be accepted if at the same time it is most carefully borne in mind that the latitude implied by "anything" must never be extended to include mendacity.

"The value of every story," the great Dr. Samuel Johnson once pronounced, "depends upon its being true. A story is a picture, either of an individual or of human nature in general. If it is false, it is a picture of nothing." In short, the propagandist's abiding motto should be, "The truth is mighty, and it shall prevail."

The Military Staff--Its History and Development

Digested by the MILITARY REVIEW from an article by Major E. J. Perkins
in the "Canadian Army Journal" April 1953.

THE aim of this article is to show in outline how the military staffs have evolved during the past 4,000 years and how this evolution has resulted in the military staffs of today.

Three Distinct Periods

In the historical approach to the subject, it is obvious that certain periods have been more productive than others in their contribution to military history and staff evolution. Generally speaking, productive military thought in any era has evolved simultaneously with cultural and scientific progress. It is paradoxical but true that the periods of history which have contributed most to civilization have also contributed the greatest advancement by which mankind could more efficiently engage in mass killings.

Therefore, since the high and low of military endeavor follow the rise and fall of man's collective intelligence it is pos-

sible to divide military history and consequently staff history into reasonably well defined periods, each characterized by its degree of contribution to military thought.

There are actually three distinct periods in history from which we can trace the development of military staffs.

The first period extends from approximately 2000 B. C. to the fall of the Roman Empire about A. D. 400. It was during this era that military methods developed from mob brawls into a definitely recognized art, based upon practically all the principles of war as recognized by modern armies. History clearly proves that the armed forces of the latter part of this era possessed a high degree of efficiency, even when estimated in terms of modern methods.

The second period generally coincides with the Middle Ages and is contrasted with the first period in that this era not only failed to contribute to the advance-

ment of warfare, but military thought was actually retrogressive rather than progressive.

The third period fostered the modern military staff organization as recognized today. It had its origin in the army of Gustavus Adolphus of Sweden and was further developed during his campaign of 1613-32. Therefore, this period can be said to cover the era from the campaigns of Gustavus Adolphus to the present.

Early Staff Development

The first armies to appear in history were the hordes of the Egyptian Pharaohs about 3000 B. C. These armies were formed for the protection of the Nile Valley from invasion, and although they were maintained by a relatively high civilization, it is necessary to place a very liberal interpretation on the term "army." The details of their tactical organization remain hidden by the past, but from what we can learn it is obvious that there was ample room for improvement. The supply services were dependent upon luck and successful banditry. According to one historian, some of them stole the sandals from the traveler, some took the bread from each village, and some took the goats from everybody.

This early period failed to contribute to military thought and it was not until approximately 2000 B. C. that the Egyptians began to realize the advantages of armies organized not for defense but for conquest. This period saw the organization of a military power that was used to conquer Syria and Palestine about 1500 B. C. There are frequent references to discussion between the commander and his staff, but in the main the staff was concerned with reconnaissance and supply. At this early date, reconnaissance played an important part in the campaign and there is strong indication that a special agency existed for the purpose of practicing it. At the same time the Egyptians developed an

administrative system and there are frequent references to the scribes of the army who were high-ranking officers charged with the responsibility of supply. This is the first instance recorded of the existence of a supply staff section in a military organization.

Fortifications and Siege Tactics

About 1200 B. C. we find the warlike Assyrians waging war with the Egyptians, and emerging from this conflict the Assyrian Empire took shape. At this time fortifications and siege tactics began to appear, assuming the status of a science. There is evidence that the Assyrians knew how to employ battering rams, siege artillery, mining operations, and scaling ladders. There were officers placed in charge of these operations and they also acted as advisers to the commander. Therefore, we see at this early date in history the emergence of an engineer officer commanding the engineer forces and acting as an adviser to the commander.

Development of Supply System

An army that was engaged upon such far-flung conquests was forced to organize a supply system. We have evidence that they established store houses and arsenals and that certain officers were charged with directing this supply service.

Following the decline of the Assyrian Empire (approximately 600 B. C.), the scepter of military might passed first to the Medes and then to the Persians. Although improvements and new techniques were introduced into warfare by the Persians, it must be remembered that the Assyrian methods formed the basis of the Persian system.

Under Darius, the Persians developed command co-ordination and planning to a more advanced degree than either the Egyptians or the Assyrians. The campaigns of Darius extended from India to the Don River. They could not have suc-

ceeded without careful preparation, especially from a supply standpoint.

Darius developed his supply system to a very high degree, even to the extent of employing ships to supply campaigns near seacoasts. He also had transports for men and horses. To have successfully co-ordinated sea-borne supply with land operations indicates a staff organization of a caliber far beyond anything previously developed.

It is interesting to note that Darius organized the first formation of a corps of marines, a detachment of which was placed on board each ship.

In spite of the continued practice of the Greek states in waging war, it is surprising that no great military contributions were made by this warlike nation. Fighting for the most part in a relatively small area, they did not think of extended campaigns. Consequently, we do not find a supply system in the Greek Army until their later wars about 350 B. C., and this service remained one of their weakest characteristics.

Although the Peloponnesian Wars from 431 to 404 B. C. introduced some tactical and technical developments, they were not of sufficient importance to influence methods or conduct of wars.

Alexander's Staff Organization

The basis of the staff organization which Alexander the Great used with such success was created by his father, Philip of Macedon. Philip developed missile-throwing weapons, fortifications, and siege operations controlled by a highly efficient engineer organization. He organized a commissary and transport system and he instituted what appears to have been the first medical organization within an army. The medical organization consisted of hospitals and officers charged with this responsibility. Philip also created a provost marshal to enforce discipline and camp regulations.

Alexander used the system created by his father throughout 13 years of constant warfare extending over all the known world. Military genius that he was, Alexander would not contend that his conquests were a one-man show. How then did he exercise command? It appears that the basis of Alexander's staff was several officers under his personal direction acting as chief of staff, adjutant, and aides-de-camp, as well as specialist officers. We know that certain officers were entrusted with one special duty that included supply, medical services, engineer works, and provost marshal duties. Since Alexander used his missile-throwing weapons very efficiently it is logical to assume that there was an artillery officer. There was also a well-established system of communications, with an officer charged with this responsibility. It is interesting to note that one Greek historian says that "Signals were not at all certain." Apparently the problems of modern communications are not new.

With the development of Alexander's staff organization we see a military staff that in some ways reflects the present-day system. Considering that this occurred approximately 2,200 years ago, the fact is remarkable.

Further developing what Philip had created, Alexander made numerous contributions to military thinking of his day. He developed the employment of his weapons in close support of river crossings and it is apparent that he had a thorough understanding of the proper employment of artillery. His engineers developed a collapsible boat that could be taken apart and transported on wagons. One final addition instituted by Alexander was the creation of a selection board for the promotion of officers. All this indicates that even by 300 B. C. military staffs were beginning to emerge in a pattern that is familiar today.

The Roman System

Like Alexander the Great, Julius Caesar found a ready-made military organization. In studying the Roman system, Caesar's era presents the high point of military thought. Therefore, this period is of the greatest interest.

The system of command in the Roman legion was a divided one. Each legion had six tribunes who functioned much like a board of governors. The tribunes were divided into pairs, each pair commanding the legion for a specified period, usually 2 months. The tribunes of each pair alternated daily in command of the legion. Strange as this system appears, it must be admitted that it did produce victories. Caesar later modified this system of command by placing a legate in command of each legion but retaining the six tribunes with the two alternating on duty as staff officers.

In addition to the tribunes, Caesar's staff had a *quaestor* who functioned as supply officer. Here we see the origin of the word quartermaster. The *cohors praetoria* were the provost marshals and the *fabri* or engineers operated under the command of the *praefectus fabrorum* or chief engineer. In addition, there were the secretaries, orderlies, aides-de-camp, and the *speculatores*. With the introduction of the *speculatores* (each legion had 10), we have the first instance of intelligence officers appearing on a military staff.

Influence on Later Doctrine

The influence of the Roman system on later military doctrine has been considerable. This can be largely attributed to the fact that Caesar was an excellent and enthusiastic autobiographer and his military papers have been widely read even up to the present day. The manner in which Roman influence continued to be felt was well demonstrated by the United States Army which was organized on the basis of the Roman legion until 1796.

So far we have seen the emergence of a staff system employing supply officers, engineers, intelligence officers, medical officers, artillery officers, and aides-de-camp.

Operational Functions

We should keep in mind that the one type of staff function that has not yet been clearly delineated is that of operations. There is nothing to indicate that the commanders delegated the operational functions to a subordinate staff. Thus operations and plans seem to be synonymous with command. Consequently the issuing of orders and the supervision remained the responsibility of the commander. As a result, we find early in history the operational functions assuming major importance in the military organization, and in spite of the ever increasing importance of logistics this trend of thought was to continue up to modern times.

Decline in Military Thinking

Military knowledge and its practice seemed to disappear with the fall of the Roman Empire and the advent of the Middle Ages. As far as the European world was concerned, there was a definite retrograde movement in military thinking, and it was only in the Byzantine Empire that the high standard of military practice and staff organization established by the Romans continued to flourish. Although Belisarius, a Byzantine commander of A. D. 505, achieved great military success, there was no apparent improvement in the military organization or the staff which had been used by Julius Caesar more than 500 years before.

The Battle of Hastings in 1066, although it looms large in history books, actually took place on a front of approximately 1,200 yards. There is no indication that either Harold or William gave much thought to staff organization.

While the Crusades used a vast amount

of the male population of Europe over a period of approximately 200 years of intermittent warfare, there was no contribution to military doctrine or staff thought. In fact, the military tactics and staff organization used by the commanders during the Crusades did not compare favorably with the methods used by Alexander the Great more than 1,300 years before.

An Efficient Fighting Machine

The thirteenth century did see the rise of a military organization under Genghis Khan. The Khan organized one of the most efficient and ruthless fighting machines that had been seen to his day. The army under the Khan's command was no haphazard gathering of the clans, but like the Roman legion had its permanent organization based on units of 10 to 10,000. Acting as commanders under the Khan were the Orkhons who commanded forces, the size of which was decided by the Khan.

The Mongols used lances, heavy armor, shields, and bows and arrows. These weapons were kept in arsenals which were commanded by certain officers. The equipment was cared for and cleaned until the warriors were summoned to a campaign. Each warrior was responsible for the equipment issued to him and woe betide the unlucky one who appeared for inspection with a shortage of equipment. Discipline was swift and drastic under Genghis Khan.

Under the Khan a highly efficient system of communications was established, covering thousands of miles. This system was manned by couriers who covered vast distances securing fresh mounts from relay stations established along the way. However, although Genghis Khan developed cavalry warfare to a greater efficiency than anything seen previously, all his achievements and knowledge gained by a lifetime of warfare died with him. It was 400 years before the world saw another commander who could challenge the reputation of the Great Khan.

Another Decline

The fourteenth century saw some improvements in military organization in Europe. The Swiss organized a professional army that dominated the European battlefields until defeated by the Spaniards at Pavia in 1525. However, there was no staff organization as such, and the commanders gave little thought to the logistical problems or the use of staff in command functions. In fact, all across Europe during the Middle Ages military thought was pushed back 2,000 years.

Inception of Modern Staff

It can be said that the modern era of military thought was ushered in at the beginning of the seventeenth century. The man mainly responsible for the foundation of this new organization was Gustavus Adolphus of Sweden. It would be wrong to say that Gustavus was alone responsible for this new trend of staff thought, for he owed much to the contributions of Maurice of Nassau who claimed the throne of the Netherlands in 1584. However, it may be said that Gustavus fused that which he gained from the past with his own ideas, and the result was a military organization and staff that could be called the seed of our present system.

Much of the historical importance of Gustavus is based upon the fact that he, probably more than any other individual, was responsible for the development of organized supply systems within the army. This improvement in logistical technique was in many ways the most important characteristic that distinguished the army of Gustavus from earlier armies. In this Swedish supply system we find much of the basis for the system of supply echelon which characterizes the logistical support of modern armies.

The introduction of a permanent judge advocate section within the Swedish regimental staff was another significant staff development. The basis for much of sub-

sequent military law was established in 1621 when Gustavus issued the field regulations establishing his system of court-martial. The regimental courts, with the commanding officer as president and the other members chosen from within the regiment, had jurisdiction over thieving, insubordination, and all minor crimes. The general court-martial took cognizance of treason and other major offenses.

As Gustavus was a very religious man, it is not surprising that he organized a chaplain service with two chaplains at each regimental headquarters. The medical section was well organized and the surgeons never lacked work as they performed the dual function of surgeon and barber. It was considered in those days that there was a close connection between amputating a limb and cutting hair, and, therefore, a surgeon should do both.

Aware of Intelligence

The headquarters staff as organized by Gustavus was basically the same as those of the regiments, but in addition to the quartermaster and the lesser staff officers, the army headquarters included the chiefs of the special arms. Gustavus also created a chief of scouts responsible for intelligence. This indicates that he was well aware of the importance of intelligence and that it was a staff function separate from operations and logistics. However, in the regiments, the quartermaster continued to be responsible for reconnaissance and intelligence.

Although technical and organizational advancements were made by Gustavus, battle was still conducted much the same as during ancient times. In fact, war was progressing by returning to the principles of Alexander and Caesar.

The staff system of Gustavus Adolphus was introduced into the French Army in 1639 when Richelieu subsidized the Swedish Army. However, about 1650 the French staff underwent several changes. These

changes are significant in that they indicate the first apparent realization in staff thought of the distinction between operational, logistical, and administrative functions.

The French System

At this time, the French organized their staff into three distinct departments. The first department, responsible for procurement and finances, was placed under the *Intendant*. The second department, responsible for operational duties, was placed under the *Marechal de Bataille*. The third department, responsible for supply, was under the *Marechal de Logis*.

The Napoleonic Wars did not result in revolutionary changes in staff doctrine, but this period is important because it afforded the opportunity for improvement. The greatest contribution of this period was made not by Napoleon, as one might think, but by General Paul Thiebault, one of Napoleon's generals, who in 1800 published a book on the organization and function of a military staff. This book, which was amazingly complete even by modern standards, described the organization of the staff, the responsibility of each officer, and the allocation of staff work. Thiebault also drew up report forms dealing with all military matters, listing the information to be included and the paragraph to be used. This book was quickly recognized by other countries as being of outstanding value to an efficient staff organization and within a short time it was published in English, German, Spanish, and Russian.

The period following the Napoleonic Wars saw various changes within the French staff but little practical improvement. The one outstanding contribution of this period was the founding in 1818 of the *Ecole d'application d'Etat-Major* to provide training for staff officers.

By 1900 we find the French staff organized on the three-department basis

with personnel, intelligence, and operations each a separate department. Supply was included as a responsibility of the first department along with personnel. By early 1915, however, the supply problems of World War I were such that a separate department for logistical support was required. As a result, a fourth department was added and we see the French system as it is organized today.

German Staff System

The German staff system reflects the French organization to a marked degree. Following the Napoleonic Wars, the German staff was reorganized using the French system as a basis. Von Moltke perfected this system and it was largely as a result of this reorganization of the German staff that the Franco-Prussian War was so disastrous to the French.

The German staff was not allowed to lag behind current military thought and it was largely through the efforts of Von Moltke and Von Schlieffen that the German organization developed into a modern staff.

There are two main differences between the German and French staff organization. The French staff has four departments while the German staff has five. Moreover, the German staff includes in the first department four subsections dealing with operations, supply, intelligence, and training, in that order. It may be seen from this organization that supply is included in the same department as operations. This appears to be a German trend of staff thought and has no counterpart in other staff organizations.

The American Staff

The American staff has undergone numerous changes since the War of Independence. When Washington assumed command of the American Army, the staff organization was quite naturally organized along British lines. However, a Prus-

sian officer, Von Steuben, commissioned by the American Government to assist in reorganizing the American military organization, was instrumental in developing the staff along Prussian lines.

Following the War of Independence, the American staff as well as the military organization deteriorated rapidly. During the Mexican War of 1845, the American forces were small, the largest military force being a brigade. The staff system was very inadequate and, because of the short duration and limited scope of the war, there was little opportunity for improvement. We do see, however, at this time a trend toward French staff organization, and with the outbreak of the Civil War in 1861 the American staff system reflected French military doctrine.

Although the Civil War brought out many lessons in staff thought, there was little of lasting influence derived from this period because no staff study was made from the knowledge gained. The staff experience gained from the Civil War died with the officers who fought there.

World War I Staff

As a result of the lack of interest placed on military organization and staff education within the United States after the Civil War, we find General Pershing in 1917 sailing for France with the American Expeditionary Force and a staff completely incapable of directing a force of such size. General Pershing was well aware of this weakness and he lost no time in making plans to organize a staff. He sent selected officers to both the French and British Armies to study their staff organization. The staff system that Pershing decided upon was predominantly French, although a few minor points of British organization were included. The result was an American staff based mainly on French organization which served throughout World Wars I and II and up to the present.

British Staff System

The British staff system of the seventeenth century reflected Swedish influence to a great extent. Actually there was little in the British staff that was new to staff history nor were there any improvements of note made during the seventeenth and eighteenth centuries. During this period there were various interpretations of the duties assigned various staff officers. The quartermaster-general appears to have the most varied functions. Under Marlborough he was responsible for supply as well as laying out camps in advance of the army. To do this he often had to take action against enemy patrols, and for this reason the quartermaster-general was often assigned sizable cavalry forces as well as engineers. All this indicates a lack of understanding in the British staff of this period of the difference between operations and logistics and the necessity for separation.

Early in the nineteenth century, largely as a result of Thiebault's book on staff organization, the British staff appeared to swing toward French doctrine. However, before much could be done, the Duke of Wellington changed any French influence that may have crept into the British staff system.

Under Wellington, the British staff system took shape in a manner that is reflected to a large degree in the present-day staff. He divided the staff into two branches, one under the adjutant-general and responsible for operations, personnel, and the chiefs of supporting arms. The other branch was under the quartermaster-general and dealt with supply problems as well as medical, paymaster, and post office responsibilities. Although Wellington's staff compares favorably with a modern staff, it must be remembered that

staff officers were not trained as such and the manner in which they carried out their duties reflected this lack of military education. The one outstanding weakness in the organization of Wellington's staff was the lack of a proper intelligence section. There is every indication that Wellington improvised on intelligence duties and in fact often acted as his own intelligence officer.

The period following Wellington saw a steady decline in British staff organization to the extent that the Crimean War and the South African War were fought with a staff far inferior to that which Wellington had employed many years before. It was as a result of the South African War that a staff study was made and by 1908 a proposal had been worked out which formed the basis of the British staff system as it has developed.

Present Staff System

The staff system used in the armies of today is the result of centuries of military evolution. The roots of our present staff organization extend as far back as the beginning of organized military operations, for in the early armies can be found the precedents followed by our present staff doctrine.

Each nation has developed certain aspects of staff doctrine peculiar to that nation, but each has borrowed from other countries. Therefore, it cannot be said that any one nation has developed a truly national staff, but all reflect the features found to be the most successful in practice.

General Jomini, one of Napoleon's generals and later Chief of the Russian Imperial General Staff, summed up the matter very well when he said, "A good staff has the advantage of being more lasting than the genius of a single man."

Enemy Field Defenses in Korea

Digested by the MILITARY REVIEW from an article in the "British Army Journal" January 1953.*

IN WESTERN Korea the distance between our forward defended localities and those of the enemy is usually governed by the distance between adjacent hills, anything from 300 to 1,000 yards apart. In general, United Nations forces occupy the hill tops and forward slopes day and night. The enemy develops and occupies them only at night. By day he mostly keeps to the reverse slopes.

In places, the forward defended localities are farther apart, with one or two hills in "no man's land," for various reasons, unoccupied by either side, but which both sides actively patrol by night. In central Korea they are sometimes much closer together, in one place the opposing front-line trenches being a little over the length of a cricket pitch apart. The United Nations troops in that sector have erected wire netting in front of their trenches to ward off grenades lobbed over by the enemy. Although in this one place alone the front lines are exceptionally close to each other, the very mention of such a state of affairs introduces the reader somewhat abruptly to the fact that we have reached a stage of development in trench warfare, which in some cases—particularly so in the case of the Chinese Communist Forces—exceeds both in extent and in intensity the trench warfare of World War I.

Since November 1951, the front line has been more or less static. Our air force has been virtually unopposed over the forward areas except by enemy antiaircraft artillery. Our artillery and air have been

capable of inflicting great punishment on the enemy whenever his artillery has opened up or his troops have moved about in the open by day. However much the Chinese Communist Forces have developed their defenses through fear of a renewed large-scale offensive on our part, they

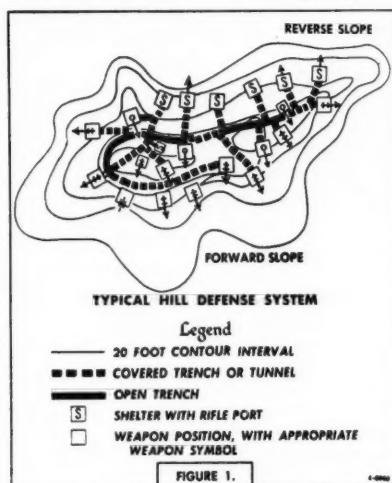


FIGURE 1.

have been forced to get underground and to reduce movement in the open to a minimum by day in order to keep alive.

In spite of the fact that the ground was deeply frozen between December 1951 and early March 1952, the enemy has succeeded in developing what, in October 1951, was a sketchy reserve line into a system of well-sited and well-constructed strong points. To withstand United Nations artillery and air bombardment, emplacements have been provided with strong overhead protection and many are now proof against anything but infantry assault or a direct hit from a 500-pound bomb.

* This article was prepared by the Commander, Royal Engineers, 1st Commonwealth Division, from information available up to May 1952. It is reproduced from the BRITISH ARMY JOURNAL by kind permission of Her Majesty's Stationery Office. United Kingdom Crown Copyright is reserved.—The Editor.

All-Round Defense

In creating his defense line the enemy has set out to fortify for all-round defense the peaks and ridges of the dominant features. This he does by means of company- or battalion-size strong points, arranged in depth; each consists of a series of mutually supporting rifle, machine gun, mortar, and gun positions connected by a network of communication trenches. Dummy positions are sometimes

tour of the hill. This often has heavy overhead protection on the forward slope and in some parts on the reverse slope. Branching off from it are connecting trenches leading to weapon emplacements and shelters. Some connecting trenches have overhead protection and between positions on the forward and reverse slope these may take the form of tunnels. (See Figure 2.) The trenches are 5 to 6 feet in depth and 2 feet wide. Their overhead

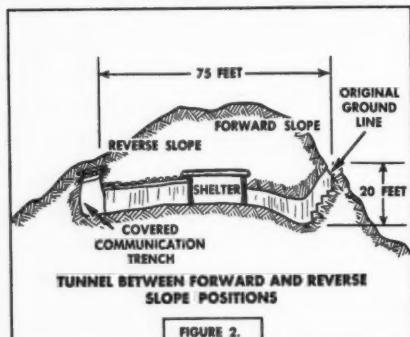


FIGURE 2.

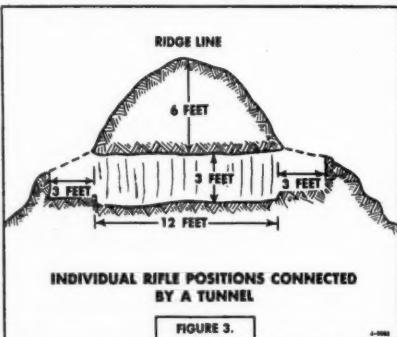


FIGURE 3.

found. Also provided are deep underground troop shelters and ammunition compartments. The enemy is thus able to live and conduct a vigorous defense for long periods without exposing himself to observation or fire.

Figure 1 shows a typical strong point arranged round the top of a hill.

Local round timber is used to reinforce positions dug into the ground, while logs are used to increase the strength of the overhead protection. Few sandbags have been found. It would appear that these are not available to the enemy in any quantity.

A high degree of skill is shown in concealment. All important emplacements are carefully camouflaged with transplanted bushes and sod, so that many are extremely difficult to spot from the air and even from close ground observation.

Each strong point normally has a main communication trench following the con-

tection consists of from 3 to 6 feet of earth and logs. The tunnels are usually 2 feet wide by 3 feet high, cut through the rock, shale, or earth.

Communication trenches are also dug from one strong point to another, and recently the enemy has started digging trenches up to 4,000 yards in length leading up to his position. Some of these are wide and deep enough to allow a loaded mule to pass along them.

Positions for Small Arms

Individual rifle positions are cut into the main communication trench at intervals on both the forward and reverse slopes. They are usually without overhead protection to allow the free use of rifles and grenades. In less well-developed defense systems, which lack covered communication trenches and shelters, individual rifle positions with overhead protection have been found.

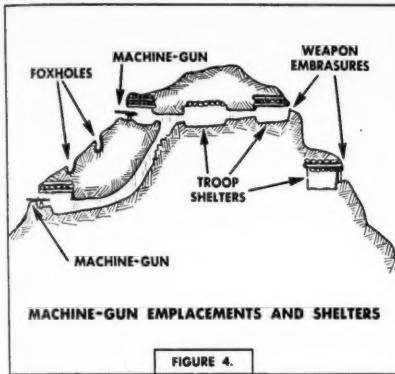


FIGURE 4.

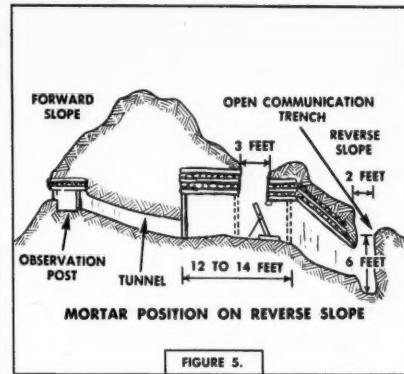


FIGURE 5.

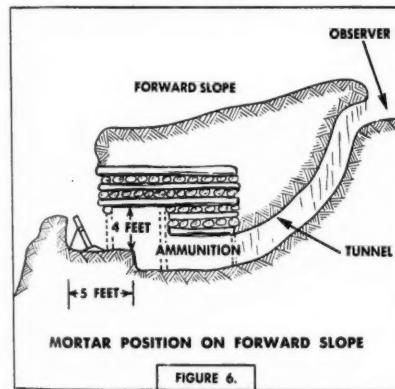


FIGURE 6.

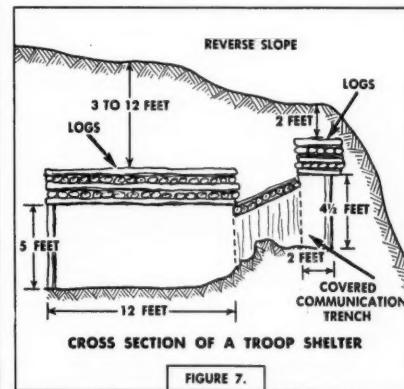


FIGURE 7.

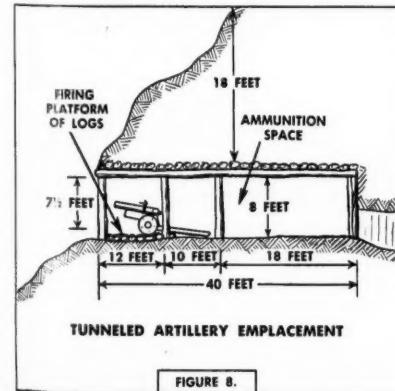


FIGURE 8.

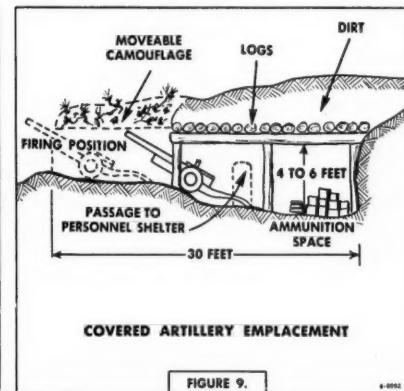


FIGURE 9.

Machine-gun and automatic-rifle emplacements are numerous and usually placed in depth near the crest of the hill. They are of cut-and-cover type of construction with heavy protection consisting of three or four layers of logs of 6-inch diameter, covered with 3 to 6 feet of earth.

Mortar emplacements are usually sited on the reverse slopes but sometimes are found on the forward slopes also. They are dug about 4 feet deep with strong overhead protection of logs and earth, similar to that provided for machine-gun positions. They are sited to cover areas dead to flat trajectory weapons. An observation post is usually constructed for each mortar, being joined to the emplacement by a tunnel.

One mortar emplacement was found with a large sheet of iron for overhead protection. The mortar was fired through a square opening in the sheet of iron. This, however, offered less protection than the conventional log and earth covering.

Incorporated also in the strong point systems are troop shelters. These are constructed on the reverse slopes with very strong overhead protection consisting of anything up to 10 layers of logs with a covering of 3 to 12 feet of earth. Others are dug deep into the sides of the hills with access by tunnel. Logs up to 12 inches in diameter are used to support the roof. Most of these shelters will stand any bombardment less than a direct hit from a 500-pound bomb. Most of them provide space for five men only, thus reducing casualties if the shelter were to receive a direct hit. Headroom is not usually greater than 5 feet. They are often fitted with internal heating arrangements. Some of the more recent shelters are larger and are reported to be dug so far into the hills that they are capable of withstanding 1,000-pound bombs.

The largest shelter found so far was big enough for 150 men, with firing em-

brasures for 7 machine guns. This, however, was a freak.

Troop shelters are not normally used as firing positions, but in some there are weapon embrasures. (See Figure 4.)

Gun Emplacements

The incorporation of artillery emplacements into hill strong points is not common but has been found. Two types of emplacements are shown in Figures 8 and 9. The crew's quarters and ammunition are grouped close to the gun and protected equally with the weapon. The advantage of the tunneled type is that the tunnel provides a means of escape for the gun. After one United Nations attack, a battery of four 75-mm guns was found dug in on a forward slope in tunneled emplacements similar to those shown in Figure 8. The beams and uprights supporting the roof were of 18-inch diameter.

On a few self-propelled gun and tank emplacements have been captured. They show no special features of design except a high standard of camouflage.

Concrete and Wire

A few reinforced concrete pillboxes have been found, which were apparently constructed as part of the original 38th Parallel defenses. They have no special features of interest. It is almost certain that the Chinese Communist Forces have constructed no concrete emplacements since the beginning of the conflict.

The enemy uses very little wire. This is thought to be a result of a shortage of supply and the transport to bring it forward. The few wire obstacles that have been found have been crude and mostly ineffective, and often not covered by fire.

Mines and Antitank Obstacles

Although there have recently been isolated reports of the existence of a few enemy defensive and protective mine fields, up to date they have used mines,

both antitank and antipersonnel, for harassing purposes rather than as part of the fixed defenses. Fenced off and marked mine belts have not, so far, been encountered. The Chinese Communists frequently lay a few carefully concealed mines on the routes, or possible routes, of United Nations patrols. Their tactics with antitank mines are similar. When they withdraw, mines are found wherever they are most likely to cause the greatest hold-up to advancing tanks and vehicles, in particular, in narrow defiles, bypasses to demolished bridges, and around antitank ditches and obstacles. The usual pattern of nuisance mines—if one can call it a pattern—can best be described as an irregular triangular one. There is no evidence of proper “records” being kept.

The enemy is particularly skillful at making booby traps, generally making use of improvised shells, grenades, and other explosive charges, set off by a mine exploding above them.

A number of antitank ditches have been dug across roads and narrow valleys. These are usually 10 feet wide and about 5 feet deep. Road blocks of timber, and sometimes steel, have been met, often well sited but not always covered by fire.

Enemy Reactions to Attack

When heavy artillery fire is brought down, the enemy normally leaves his open positions and goes to the troop shelters. During this stage, United Nations troops, aided by the lack of wire and mine fields, have been able to advance comparatively easily. When, however, our artillery fire is lifted for the final assault, the enemy quickly returns to his positions and rains down grenades, and mortar and machine-gun fire.

When United Nations forces have established themselves on the strong point, the enemy has been known to counterattack with large numbers of men, who emerge unscathed from deep shelters. On one occa-

sion, a total of 150 Communist troops hid in their shelters and emerged to counter-attack and drive United Nations forces off a ridge, which they had just captured.

Limited Offensive

It has been found that artillery and direct fire weapons can effectively silence emplacements on forward slopes by closing their firing apertures, if not actually destroying them. However, positions on the reverse slopes, on which it is difficult to secure a direct hit, often remain effective until actually overrun by infantry and attacked with grenades. Air attack with rockets, napalm, and machine guns has alone seldom dislodged the enemy from reverse slope positions.

The strength of the enemy's positions can be judged from one fortified hill, which held up an attack for more than a week and which caused considerable casualties to United Nations troops. This defense was conducted in spite of heavy mortar, artillery, and air bombardment, including a *B-29* air strike.

Misleading conclusions can easily be drawn from all this, unless they are reviewed in their proper perspective. First of all it should be borne in mind that since November 1951, although we have freely used air and artillery to inflict heavy punishment on the enemy, ground attacks have been confined to battalion size, or less. United Nations forces have not been permitted to stage an offensive on any large-scale.

Lately the weight of United Nations air and artillery attacks has forced the enemy to dig progressively deeper shelters and to provide overhead cover and camouflage for almost every emplacement. To be free from interference in bringing up his supplies and reinforcements to forward positions, he has been forced to dig long communication trenches.

He has not done all this unmolested. Every day he, his emplacements, and his

shelters take considerable punishment. However, the enemy is both patient and persistent. Nightly he mends the damage done by day and improves his defenses.

Like all deliberately prepared fixed defensive positions throughout the ages, the ones the Chinese Communist Forces have succeeded in developing are by no means impregnable. They can be breached by determined attack. They can be turned to little avail by an army which possesses superior mobility, an airborne force, or the power to land and maintain a sea-borne force in their rear.

None the less, one must give the enemy his due. During the 8-month period ending in May 1952 he made sensible and often

cunning use of his huge manpower resources—by and large unskilled—to produce, by elementary methods, a defensive system which is both strong and deep. To meet his requirements for the present phase of the conflict in Korea, the efforts forced on him by our artillery and air attacks have been far from ineffective. They are a good lesson to us of what can be done by manpower alone, given a sufficient quantity of it, with picks and shovels, a few crowbars, a little explosive, some ingenuity, and a great deal of hard work. They also serve as a reminder to us that the days of intensive and extensive trench warfare in defense may by no means be over.

The Functions of Military Security

Digested by the MILITARY REVIEW from an article in the "Australian Army Journal" March 1953.

THE aim of military intelligence is to evaluate and interpret information that will indicate the capacity, ability, and will of a foreign army to wage war, and at the same time to deny the enemy similar information concerning ourselves.

It is the last part of this aim that we propose to discuss—denying the enemy military information about ourselves. This is the task of military security or counter-intelligence, although the latter term also embraces civil security.

It is accepted that the basis of all military preparations and plans must be good information. This applies equally well to the enemy or to a potential enemy.

In a previous article, it was suggested that any enemy agent might ask himself three questions:^{*}

1. What type of information is required?
2. Where is this information to be found?

3. How am I going to get it?

Let us examine these questions more broadly than was done previously.

What type of information is required? This does not vary much during peace or in war—plans, training methods, organizations, order of battle, and morale of troops.

Where is this information to be found? Sources which have proved themselves in the past are from documents obtained from headquarters, offices, and careless disposal of waste; from careless talk by employees and troops in public places, in correspondence, and over the telephone; from indiscretions by the press, periodicals, and radio; and from observation by agents of the movements of troops, supplies, equipment, and stores.

How is the agent going to get this information? In the previously mentioned article it was pointed out that he will use both highly organized espionage rings and casual agents, who will be infiltrated into key places with access to the sources

* "Security—Is It Worth the Bother?" MILITARY REVIEW, August 1953.

mentioned above. This may be carried out by the organization of cells within headquarters, units, and departments. It is obvious that in order to create an effective organization, the enemy must, by means of propaganda and other subtle subversive means, win weaker characters over to the cause, in order to gain a footing within headquarters, units, or departments, where prior infiltration has been unsuccessful. These methods will often be aimed at lowering the morale of units.

Combating Enemy Aims

Having considered the task from the enemy's point of view, let us now see what we can do to combat enemy aims and methods in relation to the acquisition of military information.

In war, in the field, military security policy is laid down by the General Staff and implemented by a section of the Directorate of Military Intelligence, through General Staff (Intelligence) personnel on the higher headquarters, with field security personnel as operatives.

During peace, the procedure is the same as in war, and close liaison is maintained with the security people in the Navy and Air Force and with certain civil security agencies.

Security Within the Unit

How does military security work? Let us start from the unit level.

By direction of the military authorities, the commanding officer of each unit will appoint a unit security officer, who will be responsible to the commander for the security within the unit. The security of the unit is, of course, always the commander's responsibility. The unit security officer should be a fairly senior officer in the unit, and is often the second-in-command.

The security officer is responsible for:

1. Educating all ranks to a high degree of security consciousness.

2. Advising the commanding officer on security precautions which should be taken within the unit.

3. Ensuring that all current security instructions are observed within the unit and, where necessary, preparing standing orders for security.

4. Investigating all security matters arising within the unit.

5. Locating and identifying subversive elements within the unit.

Perhaps the most important duty of the unit security officer is in the education of all ranks in security matters, for if there is a high degree of security consciousness, then any enemy agent is going to have a hard time getting information from the unit or in establishing a subversive cell within it. In order to promote this security consciousness, the unit security officer may use such training methods as talks and discussions, exercises, demonstrations, and the use of posters. Moreover, disciplinary measures should be taken against breaches of security.

In most cases, field security personnel will be available to assist unit security officers, and will, if required, conduct a security survey of a unit, in order that advice may be given on any security weaknesses revealed by such a survey.

It should be clearly understood that military security is not concerned with the misdemeanors of the troops, and will not report on such matters, provided that no breach of security is involved, or is likely to be involved.

Another point, too, which should be emphasized, is that although each unit appoints a security officer, this act does not absolve all ranks, particularly officers and senior noncommissioned officers, from the responsibility of policing security regulations within the unit. Members of a unit are expected to be alert to any threat to the security of that unit, and this important duty in the lives of officers and other ranks is not always fully realized.

Security matters within a unit are reported on by the unit security officer to General Staff (Intelligence), often through field security personnel, after which a direction or recommendation will be issued through General Staff (Intelligence) for the implementation of protective security precautions or where a security investigation is required.

Four Categories

Generally, the work of military security falls under four main headings:

1. Security of information—the denial to the enemy of direct intelligence.
2. Security of personnel—the protection of military personnel against seditions and subversive influences likely to undermine morale or to affect the efficiency of the unit.
3. Security of material—the protection of military equipment, stores, and supplies against sabotage.
4. Security of operations and training—special security attention given to any operation to ensure security of plans,

movement, and training, in order that the enemy may be deceived as to our intentions. This type of security cannot be effective until there is a high standard of security of information, personnel, and matériel.

Forewarned Is Forearmed

How can you help military security to function effectively? First, ensure that you are familiar with, and strictly adhere to, general and local security requirements, and any troops under your command are "security alerted." Second, report immediately to the nearest intelligence officer any act which you consider to be subversive or which may involve a possible breach of security. Third, give all possible assistance to any field security personnel who may be working within or about your unit.

Remember, forewarned is forearmed! While it is the task of our intelligence to forewarn our commanders, it is the task of military security to prevent the enemy commanders receiving the same service.

A perusal of available military and civilian publications, during the past 3 months, indicates that material from the MILITARY REVIEW was reprinted in the following countries:

Argentina	El Salvador	Italy	Switzerland
Australia	France	Norway	The Netherlands
Belgium	Great Britain	Pakistan	Uruguay
Brazil	Honduras	Paraguay	Venezuela
Chile	Ireland	Portugal	Yugoslavia

The Editor

European Air Defense

Digested by the MILITARY REVIEW from an article by Charles Gardner
in "The Listener" (Great Britain) 7 May 1953.

IN TALKING about European air defense—NATO defense—we must realize that it is no longer possible to chop up queer-shaped little national segments of sky and say, "That bit belongs to Holland, that bit to Belgium, that to France," and so on. The air, as Lord Trenchard said many years ago, knows no frontiers. If you are going to fight a defensive battle for the West, you will have to do it over the whole broad sheet of Europe—seen as one broad sheet, and worked as one. There is no place for what I may call tatty bits of national air forces, each working, without any reference to the others, only within its own backyard. Even a formal alliance, with staff talks and an interchange of ideas and of planning, is not enough.

Co-ordination Is Essential

Today, a jet bomber flying from the East at 600 miles an hour at 40,000 feet might be spotted first by radar over Germany, tracked into France, engaged and pursued over Belgium or Holland, and finally dealt with off the coast of England, or over Denmark. Moreover, the whole business need not have lasted more than 20 minutes. Speed has shrunk the countries of Europe—compared even with the last war—to something about the relative size of an English county. The Royal Air Force could not possibly have defended Britain in 1940 if each country had had its own separate air force, none having any connection with the shop next door, and each county having only the equipment and the airplanes it could raise and finance itself. Yet, today, Europe and Britain would be in exactly that sort of defense position except for the co-ordination of NATO.

Given, then, that Western Europe can only be defended as one piece, and given

that, politically, everyone has agreed on that, we now come to how much has been done toward it, and what is the state of NATO air power today on its long frontier from the North Sea to the Alps, and in its depth from the Rhine to the Atlantic.

An Analogy

Air defense can fairly be likened to an iceberg—seven-eighths of it under water and unseen, and only one-eighth above the water and visible. The one-eighth which is on public show in Europe is the force of jet airplanes standing on the airfields. The hidden seven-eighths are all those things which enable these squadrons to do any good in combat. By that I mean the radar chains, the radar control and interception stations, the fighter sector organization; the communications, the operations rooms, the filter rooms, the warning systems, the lines of supply, the radiotelephone networks, the standardization of language and procedures and equipment; all the things which take six air forces and weld them into one continuous dovetailed weapon. Until you have these things, it is hardly any good having the airplanes at all, except for training the men to fly and maintain them. It is only this complicated ground tie-up which enables a modern fighter to fight. Without it you might as well have bows and arrows as *Hunters*, *Swifts*, and *Sabres*.

Therefore, when Western Union was first set up, the immediate thing was to get agreement on the communications and the radar and so forth—on the seven-eighths of the iceberg. It took a long time. There were a great many national (I will not say prejudices) considerations to overcome, because it involved a surrender of a great deal of local control, and that, in

turn, had political repercussions which each government had to look at. There were physical problems, too. Existing communications networks, based on civil needs, often went to the wrong places in the wrong way, and to upset the landline and telephone system, which tied up with the commercial interests of each country, took quite a bit of doing. There were other things, too, but, when NATO came into full being, it found that Western Union had done a great deal; that much had been agreed which had involved many meetings, and that (to change the iceberg analogy) the foundations of the house had been drawn, and, in part, had been laid. There was also a fairly clear idea of what the house was going to look like when it was finished. One of the big things about the substitution of the full flower of NATO for the original Western Union was that it brought in the United States and Canada as partners rather than as privileged observers. It brought offshore procurement, finance, mutual defense funds, and equipment. It made the planning much more real.

Present Air Force

With that background, let us consider the European air force as it stands today. In fact, it is called the Allied Air Forces, Central Europe (AAFCE), but it involves what we know as "The West"—France, Belgium, Holland, and Luxembourg—plus Great Britain, America, and Canada. Denmark and Norway form an adjoining Northern Command, and the Mediterranean countries group together in the south. However, it is the central bloc which we will consider, because it is probably the key one.

The headquarters is at Fontainebleau, and the Commander in Chief is, at the moment, an American, General Norstad, and on his staff all the other nations are intermingled, at all levels from the guards on the gate to the senior staff officers at the

planning meetings. From personal observation I can tell you that the officers there think and talk in terms of AAFCE—Allied Air Forces, Central Europe—and not as individual Frenchmen or Belgians or British.

A Tactical Air Command

AAFCE is a tactical air command: it has no big bombers—there are none in European commands at all; they come from the main body of the United States Air Force and its various oversea detachments, and from the Royal Air Force's Bomber Command. AAFCE is a fighter, fighter-bomber, reconnaissance, and close-support command, capable, indeed, of great offensive power, but limited to what I will call the battle area. To do its job it has two tactical air forces in the field, the 2d Allied Tactical Air Force in the north, and the 4th Allied Tactical Air Force in the south.

2d Allied Tactical Air Force

The 2d Allied Tactical Air Force is a grouping of Belgians, Dutch, and British, under Air Chief Marshal Sir Robert Foster. Here you have three air forces working together under one boss. The purely fighter defense squadrons of Belgium and Holland stay in their national areas, and their fighter-bomber squadrons can be shifted about anywhere on the 2d Allied Tactical Air Force front. However, for communications and control, and the plotting and handing on of raiders, and for concerted and continuous action against them, this is one air force. Its equipment and procedures are standardized: it is mobile, it is planned as a house and not as a series of separate rooms. All the big exercises and maneuvers we have are a work-out for the whole system. It is not perfect yet—many things are wanted—but it does not "creak at the joints" half as much as it did. Moreover, it is now getting its airfields and its modern aircraft—300 or so *Sabres* this year, more

and more *Meteor* night fighters, and it already has a considerable weight of fighter bombers—*Thunderjets*, *Venoms*, and *Vampires*. Eventually the force will have *Swifts* and *Hunters* by day and *Javelins* by night, plus Bomber Command's *Canberra*s, which are pledged to it already in time of trouble.

That, then, is the 2d Allied Tactical Air Force, with the Royal Air Force part of it stationed in Germany in depth, from the base of Denmark down to about Cologne.

4th Allied Tactical Air Force

From Cologne down to the Alps we get AAFCE's other tactical air force—the 4th Allied Tactical Air Force—under an American, General Strother. This is a grouping of French, Canadians, and Americans. The Canadians have 6 squadrons of *Sabres* there, expanding later on to 12. Some time ago the French had 300 jets—*Thunderjets* and *Vampires*—as their fighter-bomber contribution, and the Americans have a large force of *Thunderjets*, now being reinforced by *Sabres*. On top of that there are the French national defense fighter squadrons which work in with the 4th Allied Tactical Air Force, and which, as I understand it, are now more or less controlled over-all inside the allied set-up. There is, then, a control and

a combat continuity right across Europe, into Britain and into the other NATO commands in the north and in the Mediterranean.

The Job Is Not Finished

The job is nothing like finished. There is a 980-million-dollar, 4-year program of ground works and installations still going on. This includes 143 airfields—although most of these are nearly completed: there is the jet-fuel pipe lines to all the main bases, because the force, in action, could easily need up to 3 million gallons of jet fuel a day, and that is beyond truck haulage from any port. New radar is wanted: observer corps need to be formed against low-level attacks, and radio-telephone links from everywhere to everywhere are pretty well essential.

The great thing is that the pieces of the air jigsaw on the Continent have agreed to be put together; that Britain, America, and Canada have gone in as well; that you have two major tactical air forces-in-being; and that you have a six-nation defense chain and that much of it works and with every exercise it gets better—and there is an exercise of some kind every week. It may not yet be impregnable, but there is enough there to make anyone think twice about taking it on.

The challenge to air combat is a challenge that must always be met, even though the odds are against us. Whenever an air force is forced to abandon an aggressive strategy, its days are numbered. Like the wars on horseback of the previous century, the air wars of this century must be fought and won at full tilt.

General Nathan F. Twining

The RCAF and NATO

Digested by the MILITARY REVIEW from an article by Ross Willmot
in "Canadian Aviation" June 1953.

ALTHOUGH we can only speculate about the reason behind the Soviet peace overtures, it is a good guess that the Kremlin has been influenced by the successful build-up of the military forces of the North Atlantic Treaty Organization in which the Royal Canadian Air Force (RCAF) plays a vital role. The spearhead of NATO's air forces in Western Europe, the crack *Sabres* and other NATO fighters, backed by the Royal Air Force and the atom bomber fleets of the United States Air Force in Britain and Morocco, has undoubtedly made the Soviets seriously consider that further aggression might backfire.

A Change in Tactics—Not Policy

Believing that the Soviet peace overtures are more a change in tactics than a fundamental change in policy, the recent NATO Council meeting in Paris wisely decided to keep its guard up, even though next year is no longer considered to be the most likely time for Soviet attack. The NATO aim is now to keep a balance between not being lulled into a false sense of security and not being ruined economically by doing more than the West is capable of doing. The end of 1956 is now considered to be the critical period.

Build-Up Is on Schedule

Generally speaking, the 3-year RCAF build-up is on schedule. Today from the Far East to Europe more than 40,000 men (and women) in Air Force blue are serving in 31 squadrons. Some 7,000 of these are overseas. This expansion has been unequalled in peacetime, yet the high standards of the RCAF have been maintained, perhaps have been improved. A training scheme along new lines, partly

for NATO aircrews, is going full blast in 16 major establishments and construction of many modern, operational airfields, quarters, and other facilities is making good progress. By early next year, the Korean conflict-inspired plan to have some 41 squadrons with a total personnel of 50,000 equipped with 3,000 new planes, mostly Canadian-built, should be completed. However, the original estimated cost of 5 billion dollars for the entire preparedness program has now been increased by 268 million dollars plus unspecified millions as production and deliveries of aircraft enter the overtime fourth year. After the program has been completed, it is estimated that it will cost Canada 900 million dollars a year to keep our guard up.

This fiscal year the RCAF's expenditures are estimated at \$936,423,100 as compared with an appropriation of \$759,310,300 in 1952-53. This is almost half the defense budget and a considerable increase over the expenditures for the first year after demobilization of \$55,500,000.

There are official indications that Canada hopes to keep key defense production facilities in action by turning their products over to the Atlantic pact allies. This seems to be the answer to the immediate problem of what to do with these special facilities now that the rearmament program is leveling off.

Home Defense

Only in home defense has the RCAF failed to come up to its planned rate of expansion. The *CF-100* all-weather fighter, which was specifically designed for a key role in the defense of Canada, is from a year to 2 years behind RCAF requirements. As a result, at least two-thirds of

Canada, which was to have been protected by *CF-100* squadrons, is now dependent upon the United States Air Force for such protection.

NATO's original objective of 4,000 planes and 50 divisions by the end of 1952 has been approximately fulfilled and it is considered that if the Soviet Union attacked today, NATO, even if outnumbered, could give a good account of itself. The combined NATO air forces, like the RCAF itself, are more than double their size when they started with the signing of the treaty more than 4 years ago.

Current Objective

NATO, now planning for the long term rather than the short one, has revised its goal to 5,500 planes, 60 divisions for this year; 7,000 planes, 70 divisions by the end of 1954, and this should be met with little difficulty. The "infrastructure" of European defenses—bases, airfields, supply lines, and radar warning installations and the like—are going to get first attention. NATO now has 124 usable airfields across Western Europe including 35 in Western Germany. The NATO countries are beginning to build a 100-million-dollar jet fuel pipe-line system to connect 50 of these forward bases.

Soviet Air Strength

Opposing the NATO air forces in Europe is the estimated Soviet front-line air strength of a minimum of 4,000 modern jet combat planes, of an equal or better quality than ours. The Soviets have many more airfields as well. The total Soviet air strength was estimated by NATO to be 20,000 planes. Among these are at least 700 bombers of the *Tu-4* type, which have a 6,000-mile range that could be extended by aerial refueling—enough to reach Canada and return.

After the war, the Soviet aviation industry continuously expanded its production rate until by 1948 it was reported to

be turning out about 12,000 planes a year. It has continued at a 12,000 to 14,000 annual production rate ever since with the bulk concentrated on such jet types as the *MiG-15*.

Canada's Contribution

Canada has agreed to pay 62 million dollars for NATO's 3-year program of infrastructure, or 7 percent of the total amount, which is modest enough considering our resources. A large part of the work of construction of additional operational buildings and accommodation has been completed. By the end of this year Canada should have 12 RCAF *F-86 Sabre* fighter squadrons serving under NATO in Europe. She is paying 324 million dollars a year for mutual aid, mostly for armaments and munitions as well as the supply of 375 *Sabres* to the Royal Air Force, months in advance of the date originally planned (the United States is paying about 30 percent of the cost of these); 150 *Wasp* trainer aircraft engines; 300 secret mobile radar units; and the training of 1,400 NATO aircrews a year. Other equipment supplied to NATO nations from Canada includes *Fireflies* and *Seafires*. Last year as well, Canada was able to sell a number of *F-86E Sabre* fighters to the United States for successful operation in Korea. The new *F-86E*s have earned a combat ratio of nine to one over the *MiG-15* in that theater. Deliveries of the *Sabre Mark V*, powered by the *Orenda* engine, will begin this autumn. Tests of the engine indicate that it will improve the performance of the *Sabre*, making it better than those being flown in operational units.

From now on Canadian mutual aid deliveries instead of being made from existing stocks will largely consist of equipment in current production for the Canadian forces. While these deliveries will strengthen the forces of our allies and thereby add to our total defense, it is intended that their production will also have the advan-

tage of increasing the size of orders placed with Canadian factories. This should result in lower unit costs and enlarge Canadian productive capacity, thereby increasing our state of industrial preparedness.

The RCAF contribution of 4 *Sabre* fighter wings to the defense of the European theater of NATO—known as SACEUR (Supreme Allied Command, Europe)—consists of 12 squadrons, an air material base at North Luffenham, England, and the necessary logistical support units on the Continent. The wing now at North Luffenham will be transferred to Marville, France, when accommodations are available. The second wing flew to Gros Tenquin last October, an unprecedented and well-carried out operation. The third wing has established itself at Zeibruecken, Germany, and will be followed by the fourth this year to take up its position at Sollingen (Baden-Baden), Germany, not far away. An air division headquarters has been set up at Metz. The RCAF air division is part of the 4th Allied Tactical Air Force, one of two air forces under the command of AAFCE (Allied Air Forces, Central Europe). (An air division is intended to supply air support for an army of four or more front-line divisions.)

United States-Canada Region

In the United States-Canada region of NATO, the RCAF is not doing so well, even though the RCAF strategists recognize the danger of air attack in Canada.

Reports have been confirmed that Soviet aircraft are already reconnoitering our arctic frontiers.

According to the United States Air Force's former Deputy Chief of Staff for Operations, the Soviets now have "about 1,000 bombers of a type similar to the *B-29*."

"From bases in northeast Siberia or in the Archangel-Murmansk area," he says, "they are capable of making one-way at-

tacks on any city in North America. By refueling from aerial tankers at one or more points along their route the Soviet bombers could carry out two-way operations."

For the air defense of North America, the RCAF and United States Air Force have set up a well co-ordinated system. Under the radar setup, the RCAF-manned units screen Canadian vital targets and United States Air Force units screen American vital targets, even though the units themselves may be in Canada. This web of radar warning stations is connected by a network of communications. A ground observers corps has been organized to act in conjunction with the radar units. The plan is to intercept any enemy bombers by means of RCAF all-weather *CF-100* squadrons and other United States Air Force fighters.

The 1953-54 White Paper on defense has this to say about home defense:

The first regular squadron, equipped with *CF-100* all-weather, twin-engine, jet fighters, was recently formed and by the end of the fiscal year a number of these squadrons will be operating. Meanwhile, a number of squadrons of *F-86E Sabres*, designed as part of Canada's NATO air contribution, has been in Canada available for the defense of this continent. As the last of these are sent to Europe during the year, their places will be taken by squadrons of *CF-100s*. Reserve squadrons now equipped with *Vampires* and *Mustangs* will be re-equipped with *CF-100s* as these become available.

It is planned in the coming months to place more emphasis on the defense of Canada. This means additional radar stations will be established, landing strips built, and communications extended.

North Atlantic Ocean

The RCAF maritime squadrons on the east coast come under another NATO command known as SACLANT (Supreme Allied Command, Atlantic) which has the responsibility for the defense of the North Atlantic Ocean, principally from the threat of as many Soviet submarines as the

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Germans had during the war. These submarines presumably could be used to sever the vital sea lanes of communication between North America and Europe. The Soviet fleet of a considerable number of modern cruisers, destroyers, and light craft is not in a position to challenge surface ships of the Royal Navy or the United States Navy. The duties of the maritime squadrons include coastal patrol work and general naval co-operation operations.

The Royal Canadian Navy's air group, through the aircraft carrier *Magnificent*, also has an important role in SACLANT, taking part in three NATO exercises last year as well as others. The *Magnificent*, on loan from the Royal Navy, will eventually be replaced by a new carrier which Canada is buying from the United Kingdom. Work is proceeding on the carrier, to be named *Bonaventure*. The new ship will be fitted with a strengthened flight deck to permit the use of 120 modern jet aircraft which will have to be purchased.

Canada is devoting a considerable portion of its defense budget (some 42 million dollars) to aeronautical and other military research which is co-ordinated with that of other NATO countries through AGARD (Advisory Group on Air Research and Development).

The astronomical costs for aeronautical research are generally beyond the resources of smaller countries. As aviation becomes ever more complex, there is obviously more need for a greater combined effort along this line by NATO countries, even considering such obvious difficulties in the way as military security, fear of competition, and petty national jealousies. While it is recognized that research talent may be found in any country, few countries can afford the costly equipment to carry out a proper research program. Through AGARD the attempt is being made to prevent duplication of research without hindering individual development. AGARD is considered as a clearing house

to help countries which are behind in research; to co-ordinate the efforts of researchers in various countries on specialized aeronautical problems of chief interest to their country; and to assist in the joint planning of new facilities for common use.

So far as Canada goes, research into arctic problems, particularly those pertaining to flying, will continue to get primary attention. In co-operation with the RCAF, the Defense Research Board (DRB) has recently developed a special air navigation computer for the Arctic and has assisted in the preparation and publication of a manual of arctic air navigation now adopted by the RCAF. The use of jet propulsion has given great importance to metals such as titanium. DRB is becoming interested in developing techniques for extracting these metals for NATO use.

Training of Allies

As in the last war, Canada has also taken on the task of training the aircrews of her allies. Under the NATO training scheme, the RCAF is training pilots and navigators of the United Kingdom, France, Portugal, Belgium, Italy, Norway, and the Netherlands, and will begin to train "radar observers" as well. This contribution is considered to be very important because if a third world war broke out, the outcome might be decided in the first few months. Adequate numbers of trained aircrew must be ready and available before mobilization, otherwise there might not be time for such training after mobilization.

This contribution by Canada has involved the reopening of many Canadian airfields, the acquisition of much training equipment, and the establishment of a large training staff. To date, 1,600 airmen have been trained in Canada for NATO nations and 1,300 now are under training.

After the last war, the RCAF was rapidly and extensively demobilized in common

with the other services. From a wartime peak of 215,000 personnel with 48 operational squadrons, it had been reduced in 1946 to less than 13,000. However, a nucleus air force was planned, capable in an emergency of rapid expansion to any required size.

North Atlantic Treaty

In 1947—only 2 years after the war—the Soviet Union gave evidence that she still planned world domination. That year the idea leading to the North Atlantic Treaty Organization was first suggested by Canada's Prime Minister to the United Nations. By the next spring "Western Union" reached the stage where Great Britain, France, the Netherlands, Belgium, and Luxembourg signed, at Brussels, a treaty providing for their collective self-defense.

On 4 April 1949, the North Atlantic Treaty was signed by 12 nations; the Brussels Treaty powers, the United States, Canada, Norway, Denmark, Portugal, Italy, and Iceland. Greece and Turkey joined later and it appears likely that Western Germany will eventually be admitted.

The North Atlantic Treaty represented profound changes in policy for all members, but for none more so than for Canada and the United States, which had traditionally followed a policy of no entangling alliances in advance of war to assist any nation, even the United Kingdom. Now both countries are committed for 20 years to assist not only one another, but, in the event of aggression any one of the European members. Canada, like other NATO countries, has come to realize that in the postwar world the strategic frontiers of her freedom lie in Western and Southern Europe.

The North Atlantic Treaty was accepted by all major groups of opinion in Canada and was passed in Parliament without a single dissenting vote. For many years it

will undoubtedly continue to be a cornerstone of Canadian foreign and defense policy.

It was made very clear in the treaty that far from contravening the objectives of the United Nations, the alliance was sanctioned as a measure of regional self-defense by the terms of the United Nations Charter itself. Canada contributed to the North Atlantic Treaty the basic Article 2 in which the member countries recognize their common political, cultural, and economic interests and agree to cooperate in the strengthening of their free institutions and to eliminate conflict in their national economic policies.

NATO Organization

The treaty has little to say about the NATO organization except to provide for a Council "to consider matters concerning the implementation of this Treaty." It empowers the Council to set up such subsidiary bodies, including a defense committee, as may be necessary to achieve the purposes of the treaty. Thus the Council was left free to adapt the organization to meet the needs as they arose.

The Council, which now consists of permanent delegates from all member governments, is the supreme governing body, a sort of board of directors.

Late in 1950, the North Atlantic countries decided upon the almost unprecedented step of establishing in peacetime actual military command organizations and giving executive powers to the commanders. The first command to be established was that of the SACEUR, it being recognized that Western Europe was the first line of defense. Headquarters for this command at Paris is called SHAPE (Supreme Headquarters for Allied Powers in Europe). On the staff of officers are many Canadians.

Headquarters for SACLANT is at Norfolk, Virginia. As in the case of the other commands, the staff is drawn from the

NATO countries contributing forces to this command. In this organization, Canadian forces and personnel play a proportionately larger role than in SACEUR.

The Canada-United States region, the other major strategic area set up by NATO, has no organized command, nor is one contemplated for the time. Nevertheless the defense plans in this area are continuously under study by the Canada-United States Regional Planning Group.

Long before this particular regional planning group came into existence, the Permanent Joint Board on Defense of Canada and the United States (which actually was set up at the beginning of the last war) accomplished considerable long-range planning on a high level. This board was responsible for the airports of the Northwest Staging Route, of the Crimson Route, and of the Alaska Highway. Progress has been made in the standardization of arms, equipment, and organization of the RCAF and the United States Air Force, and personnel are continually being interchanged. There is reciprocal provision for air facilities; joint weather and Loran stations in the far north; and at Fort Churchill on Hudson Bay there is a cold weather test center for the equipment of both countries' services.

The supreme commanders of the various regions are under the orders of the Standing Group from whom they receive strategic and political guidance. The Standing Group, on which the chiefs of staff of the three major contributors to NATO—the United States, the United Kingdom, and France—are represented, is located in Washington.

The supreme commanders of the regions have direct access to national chiefs of staff on matters concerning their forces, and as necessary, may also approach the ministers of defense and heads of govern-

ments. Liaison missions are being established at the various regional headquarters.

The senior military organ of the alliance is the Military Committee, on which each member nation is represented by one of its chiefs of staff.

To maintain the equality of representation, which is fundamental to the organization, provision is made for Iceland, where there is no military organization, to be represented by a civilian. The Military Committee is under the general supervision of the Council, to whom it gives military advice and from whom it receives political guidance which is passed on by the Standing Group to the supreme commanders.

Dominant Factor in War

Air power has been recognized by NATO as "the dominant factor in war today." In the words of General Dwight D. Eisenhower, when he was Supreme Allied Commander, Europe:

It cannot win a war alone, but without it, no war can be won. Our goal is to create air strength capable of answering immediately the onslaught of an aggressor and covering, at the same time, the mobilization of reserve forces. Since we cannot predict when an attack might be launched, air forces must be operationally ready at all times.

Canada, like the rest of the NATO countries, is putting the main emphasis on air defense, devoting 41.7 percent of the defense budget to the RCAF and 15.3 percent to mutual aid which includes aviation material. Some 2 billion dollars is going to build fighter planes, which are to be our chief contribution to NATO and our main bastion against attack at home. Last year we spent 519 million dollars on aircraft alone.

Our newly established aircraft industry is the RCAF's greatest strength as well as its greatest weakness.

Britain and the Middle East

Digested by the MILITARY REVIEW from an article by Air Marshal Sir Robert Saundby
in "The Aeroplane" (Great Britain) 3 April 1953.

THROUGHOUT most of recorded history the Middle East has been an area of world strategic importance. In the earliest days it was important as the terminus of the great overland routes southward into Africa and eastward to the fabulous lands of India and Tartary. The great cities of the Middle East grew rich and powerful owing to their strategic positions on the trade routes and, indeed, the whole area was a busy entrepôt between East and West.

With the development of the ocean-going merchant sailing ships at the end of the sixteenth century, the Middle East began to lose its commercial importance, as the flow of trade was increasingly diverted to the cape route. By the first half of the nineteenth century its prosperity had vanished, and its poverty-stricken lands stagnated under the rule of the corrupt and moribund Ottoman Empire.

The opening of the Suez Canal, in 1869, restored to Egypt much of its former importance as a vital link in the world's trade routes. Britain took a close interest in the canal from the first, and in 1875 Disraeli acquired, on behalf of the British Government, the Khedive's shares in the Suez Canal Company, thus making us the largest single shareholder. However, although the canal shortened our routes to India and the East, it became a source of anxiety to us as a vulnerable bottleneck on our lines of communication. Henceforth its security was regarded as a major British interest.

An International Waterway

It was always intended that the canal should be an international waterway, open at all times to the shipping of all nations. This was reaffirmed by the Suez Canal

convention, signed at Constantinople in 1888 by Great Britain, Germany, Austria-Hungary, Spain, France, Italy, the Netherlands, Russia, and Turkey. This instrument laid down that the canal "shall always be free and open, in time of war as in time of peace, to every vessel of commerce or of war, without distinction of flag. . . . The canal shall never be subjected to the exercise of the right of blockade."

The Canal Threatened

An upsurge of Egyptian nationalism in 1882 culminated in riots and disorders, in which a number of Europeans were killed. We pressed France and Italy to join us in restoring order, and were met by a refusal. The situation continued to deteriorate and something had to be done. Arabi Pasha, leader of the Egyptian revolt, openly threatened to destroy the canal. On 11 July 1882, the British fleet bombarded the forts at Alexandria, and on 24 July British forces landed and occupied the town. A brief campaign followed, and the rebels were finally defeated at the battle of Tel-el-Kebir on 13 September.

As a result of this intervention, Britain came to be regarded as the custodian of the canal. We made many attempts to induce other powers to share with us this responsibility, but all came to nothing. It suited the other powers well enough for Britain to take on this burden, which, in addition to the cost, was bound to bring us into collision, sooner or later, with Egyptian national aspirations.

During World War I, the last to be fought on purely two-dimensional lines, the security of the canal was a paramount British interest. Large forces were sent to the Middle East and, presumably on the

principle that "offense is the best form of defense," our armies conquered Palestine, Syria, and Iraq, and drove the Turks out of the Middle East. Egypt was declared a British protectorate, but in 1922, as part of the general resettlement of the conquered area, she was granted independence and became a sovereign state under King Fuad. A treaty was signed between the two countries, giving us the right to station land and air forces, up to an agreed strength, in Egypt.

Continued Egyptian agitation against "foreign occupation" led to a new treaty, signed in 1936, which expressly recognized that the defense of the canal was a British interest.

In World War II, we apparently still regarded the defense of the canal as a primary British interest, and employed large forces to protect Egypt from Italio-German threats from the west. The reasons for this policy are, to me at least, obscure. Axis air power based along the north shore of the Mediterranean and, to a lesser extent, the existence of the Italian Navy prevented us from using the Mediterranean as a sea route. Everything needed for the defense of Egypt had to be sent by way of the Azores and the cape, a long and dangerous sea route that placed a severe strain on our merchant shipping. As we could not, in any event, use the canal, I cannot see why we should have devoted so great an effort to its defense—an effort which constrained us, for want of resources, to lose Singapore, Malaya, and most of Burma.

It is, of course, true that, even if the defense of the canal was not a vital interest, it was essential to guard the oil-bearing areas of the Middle East. Germany and Italy possessed few sources of oil, and it was more important to deny them access to Caucasian and Middle East oil than to retain it for our own use.

However, the Germans reached the very gates of the Caucasus before their failure

at Stalingrad sealed the fate of their attempt to reach the oil fields. They were at the far end of very long and insecure communications, and their drive eastward had lost its punch. Surely it was not necessary to stop the Axis forces in the Western Desert in order to protect the oil fields of Iran and Iraq. I believe that if we had stood on the defensive, with less than half the forces we had in North Africa, in well-chosen positions covering the oil fields, we could have been confident of our ability to keep the Axis from them.

Postwar Situation

Since the war, one can discern an element of uncertainty in our approach to the problems of the Middle East, and of Egypt in particular. In 1936 we were quite clear about what we wanted. We definitely based our claim to retain our forces in the canal zone on our right and duty to defend "the liberty and entire security of navigation of the canal." Once more we are under pressure from Egyptian nationalists, this time to quit their territory unconditionally. We have to consider whether the reason set out in the 1936 treaty still justifies our maintaining large forces on Egyptian soil, or whether there are now other and more valid reasons for such a policy.

It is true that recently the Egyptians have been disregarding the Suez Canal convention by denying passage through the canal to certain vessels bound for Israel. In this they are clearly in the wrong, but the presence of British forces in the canal zone has not enabled us to compel the Egyptians to observe the convention. We cannot, therefore, claim that the existence of British forces in Egypt enables us to guarantee to all nations their rights under the convention.

If the Soviet-Asiatic powers should force a third world war upon us, we could scarcely expect to maintain our sea communications through the Mediterranean.

It is difficult, therefore, to justify the need for maintaining land forces in the canal zone for the protection of a waterway which we should, anyhow, be unable to use. Moreover, we may well be asked in what way we suppose that our land forces could protect the canal in the event of such a war. The canal could be blocked most readily by sinking a few ships in the channel by air attack or, if it were thought worth while, by atom-bombing the ports of entry. What could the Army do to prevent that?

A realization of these facts has led many people to shift their ground and to argue that, although our land forces in the canal zone can do little to protect the canal under modern conditions and that anyway its protection may no longer be a vital need, such forces serve a very useful purpose as a strategic reserve, and help to stabilize the always fluid political situation in the Middle East. They contend that, but for the restraining effect of our forces in the canal zone, Israel and the Arab states might now be at war, and the whole area in a state of conflagration. They also urge, with much truth, that without a secure base in the Middle East our strategic air mobility would be gravely impaired.

There is much to be said for both these arguments. It is possible that if, under present conditions, we were to remove our forces from the Middle East, a serious deterioration would occur. Moreover, the political situation in the Middle East is already such that any serious deterioration might lead to desultory warfare, religious feuds, chaos, and famine. These conditions would provide a breeding ground for communism, and might even furnish an excuse for overt Soviet intervention.

It is clear that we cannot maintain an effective base in Egypt in the face of the determined hostility of the Egyptian Government and people. If, therefore, we are to remain in Egypt, we must succeed

in negotiating some agreement satisfactory to both countries.

It is not likely that we could persuade the Egyptians to agree to our continued occupation of the canal zone on the grounds that the stability and well-being of the Middle East depend upon the existence of a strategic reserve of British troops in that area. From their point of view, this would be adding insult to injury. We should be asking them to allow us to maintain our troops on their territory for the purpose of keeping them and their friends in the Arab League in order. We could not, I think, hope that such an approach would be successful.

A more useful approach would be to convince Egypt of the dangers of Soviet intrigue and intervention which weakness and chaos in the Middle East would bring with them. At least this will be no easy task, and the Soviet Union has already made it more difficult by adopting an anti-Semitic policy, designed to appeal to the Arab League and to those in Germany, and they are not few, who still dislike and distrust the Jews.

Another Middle East Base?

In these circumstances, we might be wise to cut our losses in Egypt and seek a Middle Eastern base elsewhere. What are the prospects of doing so?

Israel is geographically suitable but would be politically impossible, as such a proposal would forfeit the co-operation of the Arab League. Iraq, Syria, and Libya are undeveloped and somewhat remote. Moreover, we could not rely on security of tenure in any of these countries. The same is true of the Sudan, and any suggestion of using it as a base for our forces would raise serious political complications. This leaves us with only two alternatives, Cyprus and East Africa.

It would be unwise to spend money on creating a base in Cyprus, as there is already in that country a strong agita-

tion for "Enosis," or union with Greece. The future of the island is, at best, uncertain and we should risk spending large sums which might, in a few years, be wasted. East Africa is no doubt politically safer, but the area is distinctly remote and has poor communications. A great deal of money and effort would be needed to improve the latter and for accommodation.

Therefore, we are driven back on Egypt as the only sensible solution. The most promising course seems to be an approach to Egypt on new lines. However, I feel very strongly that it would be wrong for Great Britain alone to attempt this task. For 70 years, since 1882, we have borne on our shoulders the burden of defending international interests in the Middle East. At enormous cost in lives and money, we have liberated the Arab countries from the Turkish yoke and given them independence. We have defended them against German and Italian aggression. We have raised the area from a state of apathetic ruin under the Ottoman sultans to a condition of relative prosperity and freedom. As a result, we have incurred the hatred of nationalistic elements in all the countries concerned, and our motives and actions have been misrepresented, at home and abroad, by friend and foe alike, for more than half a century.

Middle East Defense

It is time that this era came to an end, and that the North Atlantic Treaty powers extended their interest to this troubled region. Let them now approach Egypt with realistic proposals for the defense of the Middle East. General Naguib would not find it easy to rebuff a firm, collective approach such as this, and there would be a real chance of a settlement.

If the North Atlantic Treaty powers could persuade Egypt to accept the principle of a joint international defense of the Middle East, in which she is invited to participate, I am convinced that most of our present difficulties would disappear. As full and free partners in the defense of their area and in the maintenance of peace, the countries of the Arab League, and Israel no less, would soon come to see the advantages of such an arrangement for it would be clear to all that a real defense and deterrent would now be possible, in place of the absurd and outdated scheme of tying down large land forces in the canal zone for the ostensible purpose of protecting the canal.

We do not require large land forces as a strategic reserve in order to secure stability in the Middle East. A comparatively small international force, supported by adequate air transport and tactical air units, would suffice.

Coincidentally with these arrangements for defense, the North Atlantic Treaty powers should do what they can to enable the countries of the Middle East to develop their considerable natural resources, and improve their agriculture and communications. They should assist them in fostering their people's health and education. Thus we might hope to increase prosperity, reduce political tensions, and consolidate the entire area.

In this great design we now await the co-operation of the United States and other North Atlantic Treaty powers. We can no longer be expected to carry the burden alone; we have done very much more than our share and are now entitled to ask others to help in solving a problem which is both urgent and of vital importance to the entire free world.

BOOKS OF INTEREST TO THE MILITARY READER

DEVELOPMENT OF THE GUIDED MISSILE. By Kenneth W. Gatland. 133 Pages. Philosophical Library, Inc., New York. \$3.75.

By COL SETH L. WELD, JR., *Arty*

This book reviews available published facts on the evolution and current development of guided missiles and discusses the possible use of such missiles as weapons of war and research vehicles.

Mr. Gatland deplores the strict security imposed by Great Britain, his own country, on matters relating to guided missiles. Such security is given as the reason for not discussing British developments in this field and is blamed for lack of interest in, and lack of recruitment of technicians for, guided missile development. However, the author then proceeds to take British authorities to task for not recognizing the danger to Great Britain of enemy use of available weapons, both jet aircraft and guided or semi-guided missiles, and for failing to exert sufficient effort in the field of guided missiles for air defense. The impression is planted that either British security in this development field is quite effective, or else British development in guided missiles is lagging seriously. By contrast, a fairly wide coverage is presented of United States development efforts in the guided missile field. The security policies of the two nations would appear to be quite dissimilar.

The author covers the current status of surface-to-air and air-to-air missiles, supersonic weapons for surface-to-surface usage, and high-altitude research vehicles.

In each of these fields he points out scientifically possible future advancements from the base of current developments.

Two chapters are devoted to possibilities in space satellite and interplanetary flight vehicles. Only enough technical substance is injected to remove these possibilities from the dream category and to indicate their feasibility and the major problems requiring solution.

An appendix provides a tabulation of available data on more than 80 missiles and projects, some being of the unguided category.

Although the book suffers from certain inaccuracies and omissions with respect to finite data on specific missiles and projects, this is no fault of the author's since for many current projects his sources must be fragmentary or missing, and sometimes unreliable. In layman's language Mr. Gatland has provided a convenient and easily read brief of the guided missile field, within the limitations imposed by security considerations.

REVOLUTION IN CHINA. By Charles Patrick Fitzgerald. 289 Pages. Frederick A. Praeger, New York. \$4.50.

STEPPING STONES TO THE SOUTH POLE. By J. R. Nichol. 199 Pages. Library Publishers, New York. \$3.75.

THE YEARBOOK OF WORLD AFFAIRS. Published under the auspices of The London Institute of World Affairs. 378 Pages. Frederick A. Praeger, New York. \$7.50.

COMPANY ADMINISTRATION AND THE PERSONNEL SECTION. By Colonel C. M. Virtue. 424 Pages. Military Service Publishing Company, Harrisburg, Pa. \$3.00.

BY LT RICHARD G. BASTAR, JR., *Armor*

This book is the twenty-first edition of Colonel C. M. Virtue's book which was originally published in 1933. Since the first edition, *Company Administration and the Personnel Section* has been a faithful guide for administrative personnel. It is a handy reference to any and all administrative problems.

The book is divided into two parts: administrative matters over which the company commander has control and administrative matters over which the personnel officer has jurisdiction. Part one deals with supply records, company mess, unit fund, morning report, duty rosters, sick report, and personnel management. Part two covers the organization of the personnel section, career guidance, service records, correspondence, military pay, and travel regulations. In addition there are two useful appendices covering "Authorized Abbreviations" and "Preparing a Unit for Active Service."

The volume is logically arranged and has an alphabetical index as well as a detailed table of contents to make it easy for the reader to find necessary information. Throughout the book there are, in bold face brackets, references to ARs, SRs, TMs, circulars, and bulletins which are the basis for the information in the book and can be used for further reference on any subject.

From no other source could one get so much complete material pertaining to administrative matters.

I consider this volume a "must" for anyone connected with administration, either in the company or in the personnel section, and especially for the company commander who sometimes finds that his administrative responsibilities far exceed his knowledge of administration.

GENERAL BILLY MITCHELL. Champion of Air Defense. By Roger Burlingame. 212 Pages. McGraw-Hill Book Company, Inc., New York. \$3.00.

BY LT COL CLAIRE A. P. DUFFIÉ, *USAF*

Many emotional words have been written, pro and con, about this controversial, almost legendary, champion of air power. Mr. Burlingame, in this biography, attempts to present an unbiased account of the life of Billy Mitchell and of his struggle to make the United States the number one air power in the world.

In an effort to make the life and acts of Billy Mitchell credible, the author feels that it is necessary to see the man, Mitchell. Thus, Chapter One is an account of the sinking of the German battleship, *Ostfriesland*, by Martin bombers, led by General Mitchell, on 21 July 1921; a sinking which General Mitchell hoped would prove that air power, not sea power, was the United States' first line of defense. In the next 14 chapters the author presents the complete life of Billy Mitchell. This account is done in clever, narrative form, evidencing an exhaustive research of voluminous details of Mitchell's life.

Mr. Burlingame almost accomplishes an unbiased portrayal of General Mitchell. However, he seems to fall prey to the color and emotion that surrounded the General in the tense, dramatic court-martial that finished Mitchell's military career. From that point until the end of the book it appears the author is attempting to justify, in the light of history, the ideals and beliefs of Billy Mitchell. It is here that Mr. Burlingame becomes somewhat biased.

It is not known if the author had other motives in writing this book when he did. In any event, this book is very apropos to the present time. It brings to light much of the history behind doctrinal differences between the Department of the Air Force and the Department of the Navy—differences which have long been discussed on the floor of Congress.

OUT OF STEP. By Joseph Trenaman. 223 Pages. Philosophical Library, New York. \$4.75.

BY CAPT WILLIAM R. PERL, MSC

This is an Englishman's study of the causes, treatment, and possible prevention of military delinquency, and in view of our present problem of large numbers of AWOLs and desertions, this is a very timely book. Forewords by Professor Cyril Burt and General Sir Ronald Adams, formerly Adjutant General to the British Forces, testify to the value of this study, both to psychology and, directly, to the military.

The author was in charge of education for the first of three "Special Training Units" which were established in 1941, when the British Army was running short of manpower. The units were started by an order informing unit commanders that, "As an experimental measure . . . all soldiers under 21 years of age who are brought before you and to whom you would give either detention or a long period of confinement to barracks may at your discretion be sent instead to . . . Young Soldiers Training Camp. . . . The training at this camp will be specially framed with a view to reclaiming young soldiers from a career of crime and converting them into good soldiers." Trenaman's book is essentially a case study report of this experiment, and a wealth of material provided by this investigation is of significant value to those interested in military delinquency and correctional problems. It also is a contribution to the general understanding of the young soldier, particularly if he emerged from a socially or emotionally deprived childhood.

In addition to their youth, the offenders sent to these units had in common the inability to adjust to discipline and to authority. Some of them had as many as 30 or 40 previous convictions. Roughly one-third of them had been convicted of indictable civilian offenses before coming

into the Army. While at the time of assignment to the Special Training Unit AWOLs were the most prevalent offenses, the list included such violations of the law as housebreaking and theft.

The author describes, with a warmth which makes the reader feel the strength of the personal contact, various rehabilitative measures, and in much more detail the personality traits and personal history of the trainees.

Some 80 percent of the studied samples could be restored to duty after, in the average, just a few months of training. Follow up studies 3 months after showed that 76 percent of 1,039 young soldiers thus restored to duty had an average or above average record as to conduct in their unit. Up to the time of their final release or discharge from the Army, 54 percent succeeded in keeping up a satisfactory or better record.

It is regrettable that the author did not deal in more detail and in a much more systematic manner with the treatment methods, for it is this part of the book which falls in quality and value behind the excellent description of the individuals and the results achieved. Americans would also have preferred a better graphic illustration and more thorough statistical treatment; yet, over-all, it is an interesting, well-presented, and thought-provoking study.

THIS IS IKE—The Picture Story of the Man. Edited by Wilson Hicks, text by Gardner Soules. 92 Pages. Henry Holt and Company, New York. \$2.50 cloth bound, \$1.00 paper bound.

ATLANTIC ALLIANCE. NATO's Role In The Free World. A Report by a Chatam House Study Group. Royal Institute of International Affairs. 172 Pages. Oxford University Press, New York. \$1.25.

CONTEMPORARY ETHIOPIA. By David A. Talbot. 267 Pages. Philosophical Library, New York. \$4.50.

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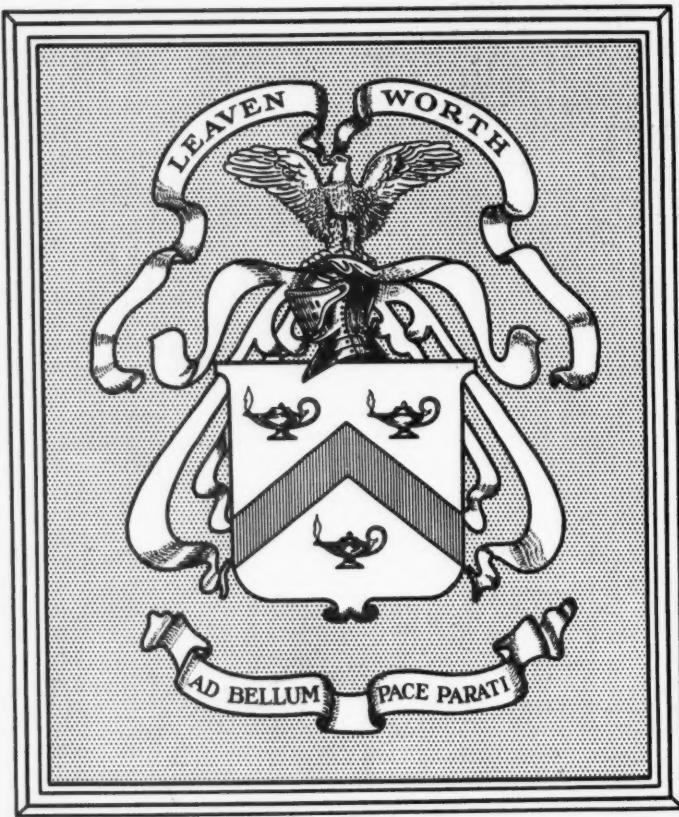
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